THE BOSTON
Medical and Surgical
JOURNAL

Volume 191 JULY 17, 1924 Number 3

ORIGINAL ARTICLES

The Massachusetts Medical Society

Section of Tuberculosis

Meeting at Swampscott, June 7, 1924

THE CARE OF THE TUBERCULOUS IN INDUSTRY

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Most chronic diseases have seemed to reside behind well barred doors and in the absence of a specific therapeutic agent it has been unusual to observe in them any rapid lowering of death rates. Of no disease has the world at large been so pessimistic of any distinct amelioration of morbidity or mortality as tuberculosis. The attitude of most individuals toward the disease has been as fatal as the disease seemed to be. The decline in tuberculosis mortality throughout the registration area of the United States from 195.2 per 100,000 in 1900 to 112 in 1920 is a very gratifying thing and justifies a reorganization of the commonly held viewpoint toward the disease. It has been shown that 100,000 fewer people are dying each year in the United States than under the 1900 mortality rate. No doubt many factors are responsible for the great saving of human lives, but there is good evidence pointing to the great improvement of environment of people generally during this period, as well as the improved care of tuberculous individuals, as playing a predominant part, and one is inclined to agree with Dublin's* conclusions that the influences of environment predominate over the genetic.

For long it has been recognized that the mortality rates from tuberculosis vary greatly with occupation, and while farmers, railway engineers and firemen, chauffeurs, agricultural laborers, brickmakers and coal-miners comprise occupations in which tuberculosis mortality is low, we find lead-miners, stone-cutters, barmen, filemakers and tinmakers with mortality from tuberculosis from five to twelve times as great as those more favorably occupied. Studies of various occupations have been made to determine methods of reducing tuberculosis, and they have revealed in a large measure the fact that it is the nature of the industry itself which subjects the worker to the great hazard of tuberculosis. Some of these unfavorable factors are controllable and when controlled the influence on tuberculosis is made manifest. Dublin states that an annual charge of five hundred million dollars can be laid to tuberculosis in this country, and not a small part of this could be saved if the disease as it is affected by industry could be eliminated.

It was but natural that the Metropolitan Life Insurance Company, having about fifteen million policyholders in its Industrial Department, all working people, should interest itself in the tuberculosis problem in America. The mortality rate among the Company's Industrial policyholders in 1911 was 224.6 per 100,000. A very definite campaign of education in matters of prevention and cure was undertaken in 1909. This consisted of a country-wide nursing service for Industrial policyholders and the distribution of instructive literature. In 1921 the death rate from tuberculosis had been reduced to 117.4 and in 1922 the rate was 114.2, making a reduction of 49.2% in these eleven years.

Another step in the promotion of the anti-tuberculosis campaign consisted in the building of a sanatorium at Mt. McGregor, N. Y., for the care of the tuberculous employees of the Company. This constructive effort aimed to serve two purposes—to directly relieve and cure the sick, and provide an education in tuberculosis prevention and cure which would permeate the entire working staff and eventually penetrate the great body of policyholders. Furthermore, we had some very definite ideas about tuberculosis as a disease through the demonstration and understanding of which we believed it would be possible to promote this helpful undertaking. These were, first, that tuberculosis disease depended largely upon an exceptional opportunity for infection and a poor environment after the implantation of infection; second, that poverty, improper housing, bad working conditions, and other diseases of the respiratory tract, predisposed to tuberculosis; third, that tuberculosis is not solely a medical problem but largely social; fourth, that early tuberculosis is very amenable to treatment; fifth, that a wholesome, intelligent respect for tuberculosis is a desirable asset for every individual to possess; sixth, that there are three things in life to which people tie —their family, their church and their job.

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* "The Causes for the Recent Decline in Tuberculosis and the Outlook for the Future," by L. I. Dublin; address delivered before the 19th annual meeting of the National Tuberculosis Association at Santa Barbara, Cal., June 20, 1923.

The Sanatorium was opened in November, 1913, and up to Dec. 31, 1923, 1590 tuberculous patients had been admitted. The present number of employees of the Company is over 30,000, and they are engaged in nearly all States of the Union and Provinces of Canada. The plan is to provide full and free treatment for all patients. Traveling expenses of tuberculous patients are paid from and to their homes. A form of disability insurance has been in operation for ten years which provides a living income for the family at home during the wage-earner's illness. With the opening of the Sanatorium our first effort was to apprehend all obvious cases and get them under treatment. A systematic campaign was started to bring about the recognition of tuberculosis in its incipiency. The first step in this undertaking was an annual examination of all employees, which has been continued each year. These examinations brought the Sanatorium into close touch with the Company's examiners throughout the country and aroused their interest in the welfare of the staff. Many latent and early cases were thus discovered. During this first year—1914—28% of the admissions were incipients, 57% moderately advanced and 14% far advanced. These figures compare favorably with those of most sanatoria in America and England, which means that when tuberculous individuals are left to their own devices about 25 to 30% will seek treatment while their disease is early and favorable. It has been further shown that the average case of tuberculosis waits nearly two years before getting his diagnosis and treatment. It seemed to us, however, that we should do better than this with a circumscribed group of people and with reasonable facilities at hand for seeking out those who were ill. We could not leave the matter entirely to an annual examination; so much might happen during the twelve months. In order to enlist every helpful influence we then brought to the Sanatorium, at opportune times, the Managers of the Company from all parts of the United States and Canada. These men have, for the most part, been in the Company's service long periods of years and have the welfare of their staffs at heart. We believed there were definite features of tuberculosis which could be recognized by laymen, and the effort was made to point out to the Managers ways in which they might be helpful in finding active tuberculosis in their staffs. Emphasis was placed on the decreasing vitality of nearly all younger individuals in whom tuberculosis is active. So prominent a factor has this become that today we feel that falling off in an individual's earning power commonly betokens illnesses, and among the insidious diseases found in such individuals tuberculosis is perhaps the most frequent. Various means have been used to stimulate the detection of the early cases, but none has proved more helpful than the aid given by intelligent, sympathetic Managers who are keenly interested in the health of their employees.

Resulting from these several efforts in getting cases under treatment while the disease is early the incipient cases admitted increased each year until 1917, when we had 66.5% admitted in the early stage of the disease, and the average for all years is 51.4% of incipient admissions. The table below shows how the 1590 tuberculous patients admitted from Nov. 24, 1913, to Dec. 31, 1923, were classed.

Suspects	69	4.3%
Incipient	818	51.4%
Moderately Advanced	561	35.3%
Far Advanced	125	7.9%
Non-pulmonary	17	1.1%

Unlike most sanatoria we have placed no definite limit to the length of time patients can be treated, and we believe this is a wise provision. In the first place, the advanced case is kept longer from home where he may endanger susceptible individuals; second, recovery frequently will take place with prolonged treatment in a sanatorium, which could not obtain under living conditions in the home; third, the longer the instruction period of the average patient the more he becomes habituated to proper methods of living. We attempt to restore our patients as completely as possible. Generally they return directly to work from the Sanatorium. We therefore purpose completing the rest cure and restoring strength through exercise, under observation, which will make safe the transition to working conditions. We know that most patients with recoverable tuberculosis do well in the sanatorium and that they relapse commonly within a few years after discharge. Many patients are obviously under-treated from lack of facilities and are forced into the world quite unadjusted to cope with its problems. Our incipient cases have been treated on an average seven months and fifteen days throughout the ten years. The moderately advanced cases have remained under treatment an average of one year and twenty-seven days. That these longer periods of treatment have affected our immediate results is shown in the following table, which gives the condition on admission and discharge of 1470 cases discharged from 1914 to 1923.

In this chart is shown strikingly what a recoverable disease tuberculosis is (96.6% of 795 cases admitted as incipients were arrested, quiescent or improved) and re-emphasizes the need of continuous, persistent effort in the detection of this malady while curable. With this class of cases the period of treatment is relatively short and decidedly certain. As soon as tuberculosis has crossed the threshold of incipiency the problem changes. A much longer period of treatment is required and the results, also, are far less satisfactory, as shown by the fact that only 79% of the moderately advanced cases achieve this desirable result, while in the advanced cases but 31% could be considered improved.

Condition on Admission	Total Cases	Apparently Arrested or Quiescent		Improved		Unimproved		Died	
	1470	859	58.4%	406	27.6%	125	8.5%	80	5.5%
Suspected	59	1	1.7%	58	98.3%	0	0	0	0
Incipient	795	628	79.0%	140	17.6%	20	2.5%	7	0.9%
Moderately Advanced	504	219	43.5%	181	35.9%	64	12.7%	40	7.9%
Far Advanced	96	10	10.4%	20	20.8%	36	37.5%	30	31.3%
Non-pulmonary	16	1	6.2%	7	43.8%	5	31.3%	3	18.7%

Not only is the effort made to restore patients to full working efficiency, but they are re-admitted for second or third courses of treatment. Out of our total discharged tuberculous patients 143, or 9.7%, have been re-admitted to the Sanatorium. Sixty-three of this number were re-admitted less than one year from date of their first discharge; 32 of these were originally classed as incipients, 29 moderately advanced and 2 far advanced. Thirty-seven patients were readmitted between the first and second years after their discharge, of whom 16 were incipients, 20 moderately advanced and 1 a suspect. Sixteen were re-admitted between the second and third years after discharge; of these 10 were originally incipients and 6 moderately advanced. From the third year on the number of re-admissions rapidly lessens, confirming the evidence already at hand that tuberculosis tends to relapse within two years after discharge.

The usual measuring rod of hospital efficiency lies along the line of so-called "ultimate results," and we will next consider the condition of ex-patients of the Sanatorium as shown in the follow-up reports. Our patients are discharged from the Sanatorium to undertake their original work. At our Home Office in New York City, where about 9,000 are employed, the working hours are from nine to four-thirty. In the field the agent's earnings are dependent to a considerable degree upon his production efforts. Ex-patients of the Sanatorium are examined every three months for the first year, and every six months subsequently. In the Home Office intermediate diets are provided for those ex-patients requiring them. Our experience leads to the belief that life insurance work, on the whole, is a reasonably favorable occupation for tuberculous individuals, and our small percentage of relapses and the records of earnings indicate that most individuals can carry on and maintain their normal economic status.

We have just made clear that about 10% of all discharged patients have been re-admitted. Some of these are individuals with minor tuberculosis and who are yet unable to maintain health under average living and working conditions. One such individual has been treated three times without producing any substantial evidence of resistance to his disease. Fortunately the number who fall in this class is relatively small, but it is a problem that must be recognized in all tuberculosis therapy. We have kept in at least yearly contact with nearly all of the 1354 tuberculous patients discharged from 1914 to 1922. Of this total number 972, or 72%, are at work; 209, or 15.4%, are dead; 32, or 2.3%, have been re-admitted to the Sanatorium for treatment; 87, or 6.4%, are at home and unable to work; while 54, or 3.9%, have been untraced. These people have been working from one to nine years. Again the figures show clearly the hopefulness of treating tuberculosis in its incipiency, for of those who were admitted in that class 85% are still at work, while only 58.9% of those admitted in the moderately advanced class are at work, and 19.5% of those admitted in the far advanced class. The occupations engaged in by these ex-patients are varied. Many of them are agents who follow their vocation out-of-doors for considerable part. Most of them live in cities and have no little stairclimbing to do. Forty per cent of our ex-patients are clerks, 33% agents, and the remainder are occupied in twelve different vocations, such as, bookkeepers, cashiers, stenographers, nurses, etc. Some have left the service of the Company and our reports show they have engaged in fifty-six different occupations—some light and some heavy. There are a few farmers and carpenters, but nearly the largest group is still engaged in the insurance business. These persons rather instinctively gravitate back to the work to which they are habituated, and we have found, as have others, that health is better and more surely mainained when the ex-patient resumes the same kind of physical and mental exertions as those to which he has been accustomed.

We have been able to follow the record of earnings of a large proportion of our former patients, and it is of real interest to note that 88% have increased their earnings since taking their cure, while 8% are earning less, and with 4% the earnings are the same. The period covered has been one of great industrial expansion and growth and allowance must be made for this fact, but we have good evidence showing that not only the quantity but the quality of our ex-patients' work has improved, and frequently we observe in our patients the acquisition of a new philosophy and plan of life as the result of the opportunity to deliberate and reflect on their problems.

It was stated earlier that we hoped eventually to have the educational influence of this work reaching to the great body of Industrial policyholders of the Company. With a view to broadcasting in a personal way, as it were, the teachings of the Sanatorium, we have made it a point to instruct our patients thoroughly in the prevention and treatment of tuberculosis. Great numbers are discharged every year from Mt. McGregor to return to the field as agents, in which occupation they come in daily contact with large numbers of policyholders. They may, and likely do, become counselors to families, and we have accumulated a great deal of evidence showing how helpfully these ex-patients have projected their tuberculosis experiences and education into homes. Not only have they spread the gospel of wholesome living and good ventilation, and reiterated the laws of hygiene and sanitation, but very definitely have been instrumental in having the diagnosis of tuberculosis made and many patients placed under treatment. This happens so constantly that we look upon it as a very substantial contribution to the anti-tuberculosis campaign.

While at the outset only tuberculous employees were admitted to the Sanatorium, for the past seven years patients with other diseases have been admitted in increasing numbers until now the numbers of tuberculous and non-tuberculous cases are practically equal. These non-tuberculous individuals have various forms of chronic diseases, are convalescents from acute illnesses and operations, and considerable numbers complain only of that vague entity, "run-down condition." With the treatment of equal numbers of tuberculous and non-tuberculous persons in an institution over periods of years there has come about a radical change in the feeling of our employees toward tuberculosis. The phobias that previously existed with them, and which exist throughout every community in which anti-tuberculosis propaganda has been carried on, have been almost wholly dissipated; also, our patients return in large numbers to their home communities and pass on this wholesome feeling to others, and we feel certain that this effort is playing a large part in the reconstruction of people's ideas respecting tuberculosis. In all our efforts we aim to instill a profound respect for the disease and its dangers and at the same time make clear the preventive measures which throw reliable safeguards around the infection.

The Company feels that to have cared for her tuberculous children, to have restored health to those in whom health was possible, and to have given final comfort to those who could not recover, has been a very gratifying and, indeed, profitable experience. From it we have learned much of tuberculosis as it relates to our large staff, and also of its prevention. We have learned how to make these lessons applicable to some fifteen million policyholders, and, finally, have endowed large groups of our employees with a knowledge of wholesome living which has been carried into thousands of American homes and communities.

Discussion

Dr. John B. Hawes, 2nd, Boston: It must be a very great privilege to work for a Company such as the Metropolitan Life which has such a broad gauge point of view in looking at these problems of tuberculosis, and also has the ability and the willingness to carry them out. Those of us who have worked for such an organization as a State can well realize the difference. We have the willingness and the desire but not always the ability to get what we wish from the Great and General Court of Massachusetts.

I wish very much that what Dr. Howk has said, that at Mt. McGregor, the ideal of all sanatoria in this country in many ways, and a sanatorium de luxe, he takes into the wards patients with non-tuberculous diseases of all kinds, could be spread broadcast and given to the trustees of every general hospital in this state and in this country; so that they would get over that phobia, that useless and needless phobia, which they have relative to tuberculosis. For twenty years I have been connected with a general hospital in Boston and during these twenty years I have had to camouflage my diagnoses of tuberculosis in order to get patients admitted whether to the expensive private ward or to a general ward.

Dr. Howk and his Company have realized what I have tried to hammer home for years here —that the function of a sanatorium does not commence when the patient enters its doors, nor does its function end when the patient leaves. I had the very rare privilege of working with Dr. Arthur T. Cabot at the State House in 1907, when he was made chairman of the Board which built the three State sanatoria and helped to put Massachusetts on the map as far as tuberculosis was concerned. He was a far-sighted, broad-gauge man. I worked with him until he died and after his death continued in this work as secretary of the Board for some years afterwards. Gradually this thought was realized— that the sanatoria had something else to do than merely to put twenty pounds of weight on a patient and to feel satisfied when he had left with his disease in an arrested condition. The first thing we did was to inaugurate a system of discharge letters whereby we tried to transmit the information and the knowledge we had gained concerning the patient, to the general practitioner, to the local boards of health and to local tuberculosis organizations. The next thing we did was to realize that the knowledge which these superintendents had acquired by close and intensive study belonged not only to them but to the public and especially to the general practitioner. The consultation clinics our superintendents are now conducting is a splendid work. For years we tried to persuade our superintendents, I think with some little success, that they ought to have someone in the sanatorium who would instruct the patients about to be discharged, interview their employers, and inspect their homes, and help these patients to become useful factors in industry after they left the sanatorium. I think we persuaded the superintendents that to employ such a person would be a wise thing to do but we could not persuade the Great and General Court. We never could get an appropriation passed for this purpose so far as I know, for what the Legislature looked upon as a somewhat useless frill. I doubt if we ever will arrive at it in this manner.

During the last year the Boston Tuberculosis Association has appropriated money, at my request, to tackle this job of what we call placement work. We have a very high grade woman who acts as the field secretary of this placement committee, of which I have taken the job as chairman. We are trying to do in a small way, in Boston, what I hope eventually every tuberculosis association in this State will do. Before I get through with tuberculosis I hope very much to see the machinery established to carry on placement work for the discharged tuberculosis patient in every sanatorium and every local tuberculosis association in Massachusetts. We have the very close coöperation of Dr. Kelley, Dr. Remick and of all our superintendents. We are gradually putting machinery into operation whereby two or three weeks or even a month before any man or woman is discharged, whom the superintendent feels is able to do some kind of work, certain data concerning this patient can be transmitted to Mrs. Wright, the field secretary of our placement committee. Those data will concern the condition of the lungs, the temperature and pulse and such things, but especially they will inform us concerning the mentality of the patient, his ability and coöperation in the work, and the kind of work he was doing. These data, when the patient is discharged, will have already gone to our secretary, at our office in Boston. Then the patient at once after his discharge will be referred to Mrs. Wright. She will have already seen the patient's employer to try to find out whether that patient can get back to his old job, etc. With Dr. Howk's patients this must be a very easy matter. His patients are going back to be clerks, stenographers, accountants or agents for his company. But it is different when you deal with a man who has always been a machinist, for instance, but who cannot possibly go back to such heavy work, but is able to do some light work, to find work for him.

I feel that the utmost benefit is going to come from local voluntary organizations by duplicating the work which we have started here in Boston. Our work is at present very small. Mrs. Wright has had 60 or 70 patients referred to her since August, 1923. Of those 60 perhaps a dozen have been successfully placed in industry. The whole question is one of education. We must educate employers that the tuberculous patient need not be a source of danger to the other employees; we must educate the labor unions and the workers themselves that they can carry on and live their life providing they will realize their limitations, keep in touch with the doctors and keep under the closest of medical supervision; and we must educate the medical profession that this is part of their responsibility in handling tuberculous patients.

In New York there are maintained two factories for this purpose, one which does watch making and the other where they make surgeons' gowns, aprons, etc. They have an industrial colony in England for this purpose which is subsidized by the Government to a small extent. They have demonstrated here that the great majority of ex-consumptives can not only earn their living but support their families at this colony. What is being done at Rutland is another step in this direction. But the great majority of ex-consumptives, it seems to me, cannot be cared for at special workshops or at industrial colonies but must get into industries of some kind already established. This is what I hope to see before long—to see the work which Dr. Howk has described with the Metropolitan Life carried on on a broad scale, so that every local organization will consider that it is one of its very necessary functions to take up this work of trying to place the ex-consumptive back in industry where he belongs.

Dr. Harry Linenthal, Boston: I want to confine my remarks to the general relation between industry and tuberculosis. The diseases that are caused by industry may, in a general way, be divided into two groups. On the one hand we have the specific industrial diseases such as intoxications due to the substances with which the worker comes in contact. On the other hand we have general conditions in industry which may be inimical to the health of the worker, diminish his resistance, and render him more susceptible to all kinds of infections. This last group is of far greater importance than the specific industrial diseases, because it affects larger numbers, applying, as it does, to every worker employed in every industry.

The factors which may influence unfavorably the health of the worker are not necessarily confined to the immediate environment of the workshop or to the immediate conditions under which the work is carried on. There are a great many economic factors in industry which must be considered from the standpoint of health. Such questions as hours of labor, rate of wage, steadiness of employment, seasonal variation of work, where for periods the worker is forced to work excessively long hours, resulting in extreme fatigue, followed by periods of idleness All such economic factors have an influence on the conditions of housing, nutrition, habits and mode of life of the worker, and are therefore important from the standpoint of tuberculosis.

More direct factors in industry which affect health are of course the general sanitation of the workroom, cleanliness, ventilation, light, proper degree of humidity, exposure to extremes of temperature, etc. We must also mention postural strains and general fatigue in industry. All these are immediate factors in industry which have a very definite effect on the development of tuberculosis. No anti-tuberculosis campaign is complete or is fully efficient unless it takes note and tries to influence favorable industrial conditions.

Just a few words about the question of the relation of dust and tuberculosis. Dr. Howk has referred to the high mortality of workers in dusty trades. Dusts are usually divided into two groups—the so-called harmless dusts and dangerous dusts—the latter includes all mineral and metallic dusts such as exist in granite and stone cutting, metal grinding, pottery and similar industries. The relation between these dusts and tuberculosis has always been assumed to be a very definite one in view of the excessive mortality from tuberculosis among certain groups of workers. There is one very striking fact, however, which must be taken note of, and that is, that the high mortality from tuberculosis in workers exposed to dangerous dust occurs much later in life than the high peak of mortality from tuberculosis in the general population. This fact is to be noted in mortality tables in all the granite, and stone cutters, metal grinders, and pottery workers. The high peak of tuberculosis mortality in these workers comes quite late in life. This is rather paradoxical and requires some explanation.

Long exposure to these so-called dangerous dusts produces a fibrosis of the lung tissue, a condition which is insidious and very slow in its development. Now fibrosis is the way in which nature heals tuberculosis. This fact together with the late mortality from tuberculosis among workers exposed to dangerous dusts justifies at least a tentative conclusion, that these dusty trades instead of predisposing workers to tuberculosis inhibit the development of the disease.

Recent research of mortality in some specific trades, such as has been carried on among the stone cutters of Vermont, has raised the question as to the accuracy of the certification of tuberculosis in many of these cases. There is sufficient evidence to point that many deaths certified as tubercular are deaths due to fibrosis of the lungs. In some instances the tubercular infection may be superimposed upon a lung which has been destroyed by fibrosis.

I do not mean to minimize the danger to health from dust in industry, but it would seem very likely that our conception as to the intimate relation between dust and tuberculosis will have to be modified. Dust must still be regarded as a menace from many other standpoints, but it would seem as if the emphasis that has been directed to dust as the cause of tuberculosis has in some way overshadowed the far more important general sanitary conditions and economic factors in industry.

Dr. Howk, closing: I appreciate that Dr. Hawes has placed proper emphasis upon the educational function of every sanatorium in which chronic diseases are treated. He has termed our hospital a "de luxe institution," and lest it be thought that we may spoil working people who come under our care (and we are frequently asked if we don't) I will repeat the statement made that the vast majority of our patients return to their homes and take better economic care of themselves and their families than they did before they were ill. As a factor in the education of a patient I would emphasize the advantages of having frequent consultation between the patient and some member of the hospital staff over a considerable period of time before the patient is discharged. In this way a definition of his physical and mental capabilities and limitations can be made and the chances of his remaining well under working conditions greatly increased. Although as a rule we have found that the kinds of work to which our patients have been habituated are satisfactory and favorable for the tuberculous, now and then we find it advisable to change quite completely the character of the ex-patient's work. Certainly it is true that the more completely and harmoniously the ex-patient fits his job the less likely is he to break down through the stress of maladjustment.

THE PREVENTORIUM: ITS GROWTH AND FUTURE

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The word "preventorium," so far as I have been able to discover, was first used by S. Adolphus Knopf. In Arnold Kleb's book, "Tuberculosis," published in 1909, Dr. Knopf speaks of Dr. Arthur J. Richer's work at St. Agathe des Monts, where adults are taken when convalescent from pneumonia, typhoid or other debilitating diseases and kept for two or three months in an environment which is inimical to the development of tuberculosis. To quote: "The writer (Knopf) . . . has convinced himself of the good which may be accomplished by this method of treating a pretuberculous state, if it may be so designated. He has suggested to Dr. Richer the name 'preventatorium,' or preventorium, for the institution."

I do not know whether Dr. Richer ever accepted Dr. Knopf's suggestion, or not. At present, however, the word preventorium has come to mean an institution for the care of children in the first stages of tuberculosis, but as ordinarily employed it may be for those who are definitely diseased or merely demonstrably infected or even those who are only under suspicion of the infection. Instead of being so loosely applied the term should be used to designate a place where children may receive care when they can be proved to have an infection with the tubercle bacillus, but are without real disease symptoms, except possibly demonstrable glandular or bone trouble. If others are to be received they should be such as show evidence of general weakness without demonstrable cause, whether ever known to have been in contact with tuberculosis, or not.

The term is not altogether satisfactory, for it would imply that the children were to be prevented from contracting tuberculosis, whereas the major part, if not all of them, would already have the infection before they entered, as proved by tuberculin or suggested by the symptoms and physical examination. Possibly some such designation as "Sanatorium for Juveniles" or "Children's Sanatorium" might be better. On the other hand, the word "preventorium" is coming into rather common use, and possibly is, after all, the best one that can be found. It is hoped that those who come to it are kept thereby from having the adult type of tuberculosis, and if, therefore, it is considered a place where infection is not prevented, but where the more severe type of the disease is prevented, it is worth while to keep it.

What should, therefore, constitute a preventorium? It should be an institution for children who show, by history or examination, merely the juvenile type of tuberculosis. The age limit should rarely be over fourteen years. The patients should be segregated from open cases of tuberculosis but should have all of the ordinary open-air facilities that are found in the best sanatoria for adults. There should be doctors in attendance who are especially interested in the juvenile type of the disease, nurses, and school teachers for the older children, and possibly occupational therapy would be of advantage.

The curriculum, if it may be so called, should include the ordinary sanatorium treatment of fresh air, the unusual amount of rest and body-building food and such therapeutic measures as hydrotherapy or heliotherapy where these can feasibly be carried out. The time of residence should be fairly prolonged, and on the chances, should exceed three months, at least; each case being judged according to its own merits.

So far, the number of such opportunities for real juvenile tuberculosis has been few, but if the need is found the number will doubtless increase.

It will be well to consider how much need there is of such institutions. The first evidence will be, of course, the results of investigations of those who have examined large groups of children. Hamburger and Monti[1], in 1909, found evidence of tuberculosis in 95% of the poor children of Vienna by the time puberty was reached. Their figures have become the subject of a good deal of controversy, and many have thought that they applied the tuberculin test too severely and that the investigation was carried out on a class of cases that had but small chance of escaping infection with tuberculosis because of poor environment and poverty. Others who have examined children have not found as large a percentage of them definitely tuberculous, although the figures are still surprisingly high. Cunningham and Ractliffe[2], for example, examined 346 school children coming to the Boston Dispensary and found 57+% who gave a positive von Pirquet skin reaction. These authors do not state that there was any suspicion of tuberculosis that brought the children to the Dispensary and the implication is that they were the general run of cases that might present themselves at any city clinic.

These latter percentages are large, and while they are not as high as the first set, they would indicate that even Boston, which is considered a fairly healthful city for one of its size, has a very large incidence of juvenile tuberculosis. It is natural to suppose that Vienna, or Boston, or any other large city would give a larger percentage of positive or suspected cases than would rural communities. In this connection it is interesting to note that Slater[3] recently examined a large number of children in rural Minnesota and found that 88% of those examined who had been in contact with cases of tuberculosis gave a positive von Pirquet reaction, while of those who had not been in contact only 5% were positive. This would seem to prove that in healthful surroundings in the country children who have not been in contact with cases of tuberculosis may be considered practically safe, while in cities the chances for contact and infection are very much increased.

Ferguson[4], on the other hand, examined 1,346 children of school age in the rather sparsely populated province of Saskatchewan and found 56.6% who reacted to the skin tuberculin test. These figures were practically the same as those coming from Boston. It is interesting to observe that in his investigation the Indians of the province reacted in 93.1% of the cases. Here again low order of living and poverty probably played its part.

Many others have made studies and have presented figures that vary one from the other, depending on where the examinations were made, the strata of society investigated, the way the physical examinations were conducted and the kind of tuberculin used in the tests. The results all indicate that children are demonstrably infected with tuberculosis to a larger extent than was commonly supposed a few years ago.

Chadwick[5] made a study of the school children in Westfield, Mass., and found that 15% of all of them were 10% under weight, and of these 8% showed evidence of tuberculosis. His conclusions were that there were probably from eight to nine thousand children demonstrably infected with tuberculosis in this state.

The figures quoted for the probable incidence of juvenile tuberculosis have to be theoretical up to the present time. The reason is without doubt the difficulties so often present in making a diagnosis. In fact, not all examiners agree as to what shall constitute the symptoms that shall make one suspicious of the infection and when physical signs are to be considered divergence of opinion is yet more marked. It is only by painstaking work with large numbers of children, backed up by statistical observations, that real clarity of diagnosis will be reached. Patterned after Chadwick's work, the State of Massachusetts is to make a survey of all the 10% underweight school children, and those in whom there is any other suspicion of tubercular infection. We are indeed fortunate that such an undertaking is to start at this time and continue for a long enough period to give data of real value. This program has possibilities of more far-reaching consequences in the fight against tuberculosis than anything which has been inaugurated in recent years. As physicians in the state, we should lend it every aid we can.

One of the first results will be to present in fairly exact figures the number of juvenile cases of school age. It is not at all sure what the resultant figures of the survey may be. There has been enough work done here and abroad, however, to make it seem probable that the estimated incidence of demonstrable tuberculosis in children in Massachusetts is not far wrong and the indications are that there will be at least over 5,000 cases discovered. Just how many of these will be proved to have any activity of disease remains problematical, but it cannot be gainsaid that all of them will be potentially active.

It has been stoutly maintained in recent years that at least the major portion of adult tuberculosis starts in childhood and remains more or less dormant in the glandular structures until some deleterious influence fans it into flame. This hypothesis carries, as a corollary, that the disease is really incipient only in childhood, and, further, after cough and expectoration have come, with signs in the chest indicative of inflammation and necrosis in the air cells, however slight in extent, the process is already beyond the strictly incipient stage.

The scope of this discussion cannot be expected to entertain any brief for the truth or falsity of this theory. It can only be said that if the theory becomes reasonably a matter of fact the number of cases of juvenile tuberculosis that require treatment will be large, and at first glance there would be an apparent need for the immediate erection of preventoria so that the enormous number of children already infected may be brought under treatment and saved, as it is reasonable to suppose they would be in most instances, from the adult type of the disease, with its cough and expectoration and gradual wasting. To supply preventorium beds, however, for all the probably affected cases would be prohibitive; and to find suitable sites and proper staffs and equipment would be Herculean. Fortunately, there is no need to be precipitate in the matter, since there is not the slightest doubt that many agencies will contribute to the care of these cases and it will be perfectly safe to wait for the investigation to be carried on for a while before instituting a building program.

It will be helpful to consider what some of these other agencies are. For one thing, there will probably be more cases of the adult type of disease than are at present suspected. Many investigators have found a surprisingly large number of these and it is obvious that they should not be placed in a preventorium since they always have the possibility of being sources of infection and as such they should not be in intimate contact with closed or merely suspicious cases such as are termed juvenile tuberculosis. They should be sent, rather, to a sanatorium, in the ordinary sense of the word.

There are also other agencies that will care for many. Among these may be mentioned the summer camps where for a few weeks children are kept in the open and taught intensively the rules of health. Their stay in such camps is far too brief to be of itself a cure, but the knowledge gained there is of great value for the succeeding months at home. The open-air schools, also, have proved their worth as a means of building up weak bodies. Their more general adoption would be of immense value. Health clinics and nutrition classes, by making the knowledge of right living more universal, would keep many from becoming even suspiciously diseased.

There are, however, other reasons why many cases that may be proved to be juvenile tuberculosis will never have care at a preventorium. These are sociological, and of the family, and are often financial. They have to do with prejudices of many sorts and ignorance in many places. For one thing, we are not dealing with absolutely demonstrable factors. With adult tuberculosis a patient often seeks hospital care because he knows that he is ill, or at least that there is a suspicion of trouble and he wants something done about it. So much has been said about the dangers of coughing and of bacillus laden sputum, that friends and relatives are also anxious to place the individual in a sanatorium where he may cease to be a danger to them.

In childhood, however, the problem is far different. In a specific instance there may be underweight, lassitude, irritability, possibly a bit of fever and on examination there may be physical evidence of enlarged cervical or hilum glands and even a positive von Pirquet or Mantoux reaction, and still the burden of proof rests on the diagnostician to establish in the minds of the family, and frequently of the family medical consultant, that the child in question has tuberculosis. And if these are convinced, there remains the necessity of proving that the case needs care other than can be given in the home with the help of the visiting nurse and the family physician. The layman will be prone to believe that an error has been made, since the signs are all so indefinite, and the patient—if such term can really be used—is so little sick. Another line of argument will be advanced by the family to the effect that, granting there is some slight demonstrable tuberculosis present, the care of the child rightly belongs to the family, and its ideas of education, or religion, or culture, or whatever else you please, can only be inculcated with the child in its own home.

Then, the family will have the decided further objection that the cost will be of very considerable amount. For those cases who go to a state or charitable institution this objection would be of little moment, but for those who wish to go as private or semi-private patients the financial cost might become so great as to be well nigh insurmountable. By a curious fallacy of reasoning, this cost seems to be a bigger barrier for a child than for an adult, and whereas the necessary funds will often be found for institutional care of a parent or a child beyond adolescence, the cost seems prohibitive for the younger children.

In spite of these objections to the preventorium there is reason to believe that it will become increasingly important in the care of juvenile tuberculosis. The treatment that can be given in it will be of more thorough character and the results will be more quickly obtained and more lasting. It is to be expected that it will have its definite and well recognized place; and in much the same way that cases of adult tuberculosis are sent to sanatoria, or chronic hospitals, or treated at home, depending on the various well accepted needs of the individual patients, so certain cases of juvenile tuberculosis will naturally find the preventorium the proper haven.

As the needs become more intimately known, we may confidently expect that the number of such cases will be considerable. Parents will learn that children gain much faster in the preventorium environment, as we have proved by our small experience in Sharon, and as Dr. Chadwick has proved in a larger way at Westfield. With such knowledge, many of the prejudices will be removed and we shall have a larger measure of enthusiasm take its place. In many instances we have seen at our preventorium children, who at first were quite unhappy, become so content that they frequently preferred to stay in Sharon than to go to their own homes; and parents, who were at first doubtful of the wisdom of leaving the children, become enthusiastic for their longer stay until all question of any future breakdown might become thoroughly eliminated.

It can readily be seen that the whole campaign is really one of education. In the first instance, we, as physicians, must recognize that tuberculosis in childhood is exceedingly common, to say the least, and that usually it is strictly incipient in early years and so lends itself most hopefully to treatment. The visiting and school nurses will need to be go-betweens, in most instances, between the specialist, the family physician and the parents, and when, finally, diagnosis is established in any instance, the first choice for treatment should be the preventorium, and only where this is impossible should other agencies be considered. It is confidently to be expected that the preventoria, which now accommodate only a fraction of one per cent. of the probable number of cases, will come to assume a much more important role, both from the standpoint of treatment and also as clearing houses of diagnosis and investigation.

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Discussion. Dr. Joseph Garland, Boston: I am sure we will all agree with Dr. Griffin's excellent paper in all its details. As far as our experience in Boston is concerned, the Prendergast Preventorium, conducted by the Boston Tuberculosis Association, was opened in May, 1922, with twenty girls, between the ages of five and twelve. Most of these children were selected and sent to us by the Boston Sanatorium Out-Patient Department, but there are certain requirements for admission that we have attempted to insist on. These are, 1st, the age; 2nd, residence in Boston; 3rd, tuberculous hilum glands, always demonstrated by X-ray examination; and 4th, history of exposure to tuberculosis in the family. This, as can be readily seen, practically excludes bovine tuberculosis, which nevertheless I am convinced is a factor that must be reckoned with. At present we are not considering bovine tuberculosis because of the small size of the preventorium. We feel that our cases should come from a more sharply defined group. Further, our cases must show a positive skin tuberculin reaction, and at present the majority of these are being tested with the old scarification or Von Pirquet test. This, however, is not the ideal one because a certain number of positive cases are missed by this method, which would be found positive by the Montoux or intra-dermal method. We have demonstrated this quite clearly at the Boston City Hospital during the last year, where we have entirely given up the scarification method in favor of the intra-dermic.

Physical examination of the chest in making a diagnosis of a primary infection of the hilum glands I think is of very little value to the average observer. I will say nothing as far as Dr. Chadwick's examinations are concerned, but certainly for myself I find it very difficult to place any importance on the physical examination of the chest. We are relying almost entirely on the X-ray examination, the skin reaction and the history. Furthermore, all cases admitted must have a slip signed by the parents which gives us the right to send the child to a general hospital in case of any infectious disease or disease of other nature occurring.

A great deal of importance must be placed on the selection of these cases. I think in selecting cases for a tuberculosis preventorium there is great danger that altogether too much importance is placed on the examination of the chest and that other factors are disregarded. I think this can be exemplified by consideration of the fact that out of about one hundred cases that have been admitted to the preventorium there are only fifty-six that remained a long enough time to be of any value for statistical purposes. The discard was due to a number of reasons. Children were sent in with other physical conditions, that did not belong in a preventorium; for social reasons certain numbers were lost early in their stay; and for other reasons such as general mental unfitness for that type of life. I certainly should emphasize the fact that a complete physical examination of the child should be made very shortly before the child is to be sent to the preventorium, and also that the general mental makeup and social makeup should be considered.

Our camp is of a very simple type. We have a main building with rather crude offices; a dining and recreation hall, and a kitchen, and an open lean-to type of dormitory, one side of which is completely opened up, with simple canvas screens which can be lowered in case of inclement weather. During the last year also an open-air school room has been provided, and the school teacher is furnished by the city of Boston. We have not as yet what I consider of considerable importance—that is a proper infirmary or isolation quarters, because with children, sleeping as they are practically out of doors the year round it is impossible under those circumstances to care for acute infections or illnesses of a minor nature not sufficiently serious to warrant sending the children away from the camp to a hospital. It is almost certain that one is going to encounter certain minor epidemics of bronchitis, tonsilitis, etc. There is also the danger, particularly when the cases are not as carefully selected as they should be, of the more serious acute contagious diseases getting into camp. That factor should always be considered in planning for a preventorium.

As far as duration of stay is concerned, originally it was felt that from six months to a year should be the minimum and the maximum limits of stay. I feel that these are too long, because in my experience a child that is not sick, but simply has a tuberculous infection, is going to be benefitted by a preventorium life and that the maximum benefit will come in six months, and accordingly I should place the limits of stay from three to six months, and in that way give the greatest amount of good to the greatest number, rather than concentrating on a smaller number of cases.

Through the office of the Boston Tuberculosis Association a very careful follow-up system has been devised, which is also under Mrs. Wright who is taking care of the placement work that Dr. Hawes mentioned. By this system the cases are visited, and where possible brought back to the Out-Patient Department, first at three month, later at six-month intervals, for a general check-up on their condition.

Of the 56 children, whom we have felt are worthy of being used for figures—that includes the group that stayed from one to twelve months at camp—we have found that the average weight gain of a child was two pounds per month. Four children gained over 20 pounds during their stay. Those were children who stayed the longer period at camp. The group gaining the smallest amount gained from one to five pounds. The average time in the preventorium of this group was four months and ten days. That average of course is brought down by a number who remained only a month or so. The last important figure which would be of interest to know is the cost to the Association. This has been found to be 52 cents a day per head.

Unquestionably the next move in enlarging the camp, which is certain now to be a permanent fixture, will be the provision of quarters for boys, so that in a relatively short time it is hoped to have at least 40 children, equally divided between the sexes. With this extension I believe should come some sort of an infirmary or isolation quarters, as I have mentioned. The camp also is being enlarged temporarily this summer, when the weather conditions allow for the installation of tents. Finally as regards the future of the preventoria—it is my conviction that the preventorium, although still in its infancy, has come to stay, and will unquestionably and should unquestionably be a very important part of any complete and constructive tuberculosis program, whether municipal or state.

Dr. Olin S. Pettingell, Middleton: The growth of preventoria, as Dr. Griffin has just told us, represents our standing on the tuberculosis problem today, or rather it brings us up to date. Only a few years ago we were concerned in securing beds for the adult tuberculous in sanatoria and hospitals. Now it appears, at least in the East, that we have reached that stage in the development where there are practically enough beds. Following this it is natural to go back to the child program, to check the feeders for this adult type, and to prevention, or getting at these children when the infection takes place, before it develops into the extensive disease it assumes after puberty. This seems to be the problem at the present time. In 1911 I was resident physician in Stony Wold Sanatorium at Lake Kushaukwa, New York. We had at that institution a children's unit. It was one of the first institutions in the country that treated tuberculous children. The cases taken there were the hilum type. These youngsters, most of them, came from New York city. They came there emaciated, dull, listless little individuals, and in a very short time, an amazingly short time, they were restored to practically normal children. This at that stage in my experience with tuberculosis was very interesting and instructive, and illustrative of what could be done with the childhood type. The follow-up worker used to tell us that when these children returned to their homes in New York city the habits of health they had acquired at the sanatorium were not only continued but were one of the greatest factors in changing the health habits in that home.

The detection of the hilum type of tuberculosis is a very complicated and a very indefinite condition to demonstrate. At least it has been so in my experience, especially in going to the schools and examining the children. It is often asked us as we have been to these schools—what are you going to do with this child if you suspect it to have hilum tuberculosis? We say—why correct the living conditions in the home, restrict their hours of play, etc. We meet with the reply—if you knew Mr. and Mrs. So and So, their father and mother, you would realize how useless the instruction we can give is in that individual case. Of course if it can be accomplished, the first thing is to try to correct the habits of that child, plus school lunches. The next is an open air school, plus strict supervision at home. Then of course following this, if the child is not restored to normal or the disease arrested, and we can say quite truthfully in this type of disease, cured, a period of treatment at a preventorium is the next step. If we can secure enough beds in preventoria I think we shall see in the next twenty years the mortality from tuberculosis decrease another fifty per cent.

THE ACTIVE USE OF THE CHEST IN PULMONARY TUBERCULOSIS

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THE account to follow embraces the experience that I have had in applying to Pulmonary Tuberculous patients the principles of exercise, as recognized by me. In my book, "HOW SHALL I TAKE EXERCISE AND SET-UP?" published in 1918, it was said in the chapter on "Exercise in Ill Health" that, "In tuberculosis, consistent rest has been adopted so universally that exercise is a jarring word. And yet, exercise of the sort we describe ought to be just so much of an adjuvant. Particularly is one confronted with the problem of keeping up the most active possible circulation. The life of the lung's cells is of the first importance in increasing the resistance to the disease. In maintaining the integrity of the cell, our unit of circulation is the controlling factor (cf. Chapter 5). Therefore exercise directed to the circulation must always be in place."

Back of this statement was a considerable, though desultory, test of the matter in a practical way. The last four years, however, have afforded a welcome opportunity for the test of my views on an extended scale with consistent observation and follow-up. A face-to-face contack with tuberculosis, as physician at Hartford State Sanatorium, and this last year as full-time physician to the New Britain Tuberculosis Relief Society, has furnished an ample field, which has been added to in Child Health Work and Nutrition Classes.

EXERCISE as I have defined it is "any bodily activity that influences the circulation favorably." I find it necessary to connect up the organic life with the activities of the muscular system. The activities of the last must not inure to the damage or destruction of vitality, which has its seat in the organic life. A balance must be kept. Waiving considerations which a full discussion might demand, it may be said categorically, that aspiration of the thorax is the greatest influence that man has at his command for regulation of the circulation. Therefore, the freest and widest excursion of the chest is not only the basis of exercise, but is of itself exercise. This excursion we secure by the act of breathing, which however must be stimulated and systematized along physiological lines, before any full compass of its influence can be attained. Hence, my training of the chest and the invention of movements that give the widest and most rhythmical play of the chest.

Thus the haphazard use of the muscles as the criterion of exercise is to be absolutely rejected. The body is to be no longer irreverently termed a machine, but a vital mechanism, with emphasis on the vital and with science still begging the question of vitality. Rather is the human creature to be likened to a great sponge permeated with innumerable channels, large and small and 70% fluid. Or: man is one congeries of myriads of microscopic circulatory units, consisting of ultimate radicles and capillaries, all connected, all indissolubly bound up. Everything in flux: the cell itself participating and its ooze and renewal dependent upon the great wave of the major cyclosis.

In this very close-cut epitome one sees something of the pertinence of the quotation at the outset and is enabled to get an orientation as to the underlying principles of my work.

NUMBER AND CHARACTER OF CASES

In the last four years I have applied my methods to perhaps four hundred patients. These range from normal, so called, through chests with the stigmata of tuberculosis and as far as chests deserving the epithet of "The Abomination of Desolation." The purely tubercular patients of well defined degree might embrace one-half the total number. I am not able to classify. Each Tb. patient I hold to be a law unto himself. Those in the "san" offered by no means favorable conditions. One of them had been a patient of Pattison in the famous work experiment and commented that, "Dr. P. had no such patients as you have." I therefore refrain from attempting figures. Figures in Tb. are like sign boards at the cross roads; if they are rightly turned one may arrive at his (pre) destination. It can be affirmed, however, that there need be no doubt of the severe degree of pulmonary tuberculosis in a large proportion of the cases.

TRAINING METHODS

By sufferance and under mental protest and with due reservations and explanation I allowed these patients to be called my "breathers." What I have been trying to inculcate is the proper use of the chest along physiological lines and this hasn't much in common with breathing as ordinarily practiced. Tb. patients were at the outset always asked to take a full breath. The demonstration, as with children, is to me almost painful. A desperate tug on the upper chest with raised shoulders; all attention concentrated on the chest as they, and physicians and nurses as well, understand it, namely the sternum and the cartilages. Many Tb. patients have dragged so hard on the sternum as to arch it at the junction of the manubrium and gladius, or have pulled the first rib up so that it presents between clavicle and second rib. And as to the back, Tb. patients make no use of it.

All this has to be undone, the lesson must be driven home that air is not drawn or sucked in: that there is next to no noise in good breathing: that there is only one act in respiration, which is neither inspiration nor expiration, but solely the tug on the chest from without: that the more noise one makes the higher, not the deeper, and the more partial, rather than the fuller—the breath. The physiology must be kept in focus—that all the muscles running from head to chest, from arms to chest, and on the chest itself, are muscles of respiration; so many guy ropes on which man pulls and all of which he can use if only he gets properly set and hauls them rhythmically: that the atmosphere and the air in the chest is all one through connecting passages: that man expands his chest from without and nature fills it from within. Fills it with what? Air and fluid! That this last is the so-called Aspiration of the Thorax and that it is the important factor because it gives man control over his circulation. And I would again emphasize that the development of a good Aspiration of the Thorax is the goal I have had in sight. For farther elaboration of these ideas the reader is referred to the book above mentioned. There will be found my series of chest movements in which the distribution of effort and the rhythmical use of all possible leverage has been consummated. Now, these movements I have given to many of the patients, if conditions warranted it; but so satisfied was I with accomplishments of simple physiological use of the chest sc. true breathing, that I stopped here with all cases of any considerable amount of lung involvement.

The patients were first shown how badly they used their chests and given instructions and demonstrations of what it was expected to attain. Then they were taught:

1st—STANDING: To expand the lower chest laterally. The patient leans forward from the hips and places the two hands flat on the sides of the lower chest. On no account to raise the head or shoulders or make a noise of inspiration or even to think of breathing. Merely to make a separation of the sides as if he were cut in two vertically, and to make the spread as by muscular action only.

2nd—LYING: To expand the abdomen; abdominal breathing if you like, but certainly not "diaphragmatic" breathing; to speak of that or of "drawing in the diaphragm" implies a defective knowledge of the physiology of breathing. The abdominal muscles only are under our control and can be taught to inflate the abdomen and give the diaphragm more room in which to act. The pupil places the hands on the abdomen, one atop the other and well to the lower limit and is told to blow up the abdomen with some downward push, and thus to raise the hands. On no account to think of breathing, but to imagine himself cut in two transversely and the chest not to move at all.

3rd. THE DOUBLE UP OF THE FIRST TWO: The hands covering the edges of the thorax: a blowing up of the abdomen, though not to so great a degree, followed by lateral expansion: still no thought of breathing and only the muscle activities as taught: slight if any movement of the upper chest.

4th. LATERAL: Semi prone, something of the Sims Position, back up: upper arm well snugged in at the sides; first the blowing up of the abdomen, then the draw. This draw must be very steady, much prolonged, with no noise—not a gasp. First filling to be of the back and lower chest; when about two-thirds of the draw is expended, the shoulder and snugged-in arm are allowed to travel over in the direction of the mouth, which is down; at the peak the signal to let go is given and the original position is retaken. If well done this manoeuver secures an enormously large breath.

In all these movements the mouth is open. I find much nonsense directed against mouth breathing. All really deep breathing is accomplished with open mouths. Why not? Are we not employing two ports of entry for air instead of one? Then the greatest attention is paid to expiration. I teach that this is a state not an act—a state of relaxation. There would be more good breathers if more attention were paid to expiration. Time and relaxation are essential elements. Control is for other purposes. This relaxation is a paramount element in physiological use of the chest and not too much pains can be taken to secure it.

EXTENT OF PRACTICE

Since the procedure was somewhat, though not wholly, in the nature of an experiment, I early adapted a formula—one-half dozen each—one-half dozen times in the twenty-four hours. Time and experience showed that this was sufficient and patients were not encouraged to do more and more, except perhaps the side expansion standing. The explanation lies in the fact that after some wilful supervision, the physical act becomes automatic and habitual—does itself in a sense. The patients realize that and say that they become quite conscious of a lower activity of the chest; and the observer can pick the faithful in a month, because the habit-breathing has changed its style.

RESULTS

In a piece of therapeutics so absolutely unique, it is necessarily of the highest importance to affirm: it did no harm. While many cases would afford material for interesting discussion, I should never feel myself on the defensive. It is my sincere conviction that this method does not the slightest harm and that it can be followed without damage to the patient. It does not cause rupture, insufflation of morbific material is a notion not to be entertained, and it does not produce haemorrhage; in fact, with respect to haemorrhage, it has been clearly demonstrated to be curative and preventive. Half the patients had history of haemoptysis or haemorrhage, several had rose-tinged sputa at the outset of treatment, others had intercurrent haemorrhage; but the behaviour of the cases under these circumstances was entirely favorable. In other cases expected habitual haemorrhages were postponed.

A STIMULANT OF NUTRITION

Since we are trying to attain results through an influence on the circulation, in case of success, we might expect the widest possible range of events; and this we get. Nutrition we consider Weight plus, or as flesh and blood and then some. Thus an increase in weight is not tantamount to an improvement in nutrition. But since weight is considered of such transcending importance in Tb., I will say under the caption of nutrition that the influence on weight has been so striking and so significant as to be eclatant. There are of course large increases in weight under systematic rest and feeding, especially milk feeding; but nothing is more illusory, undependable and fallacious. Gains of 40 pounds can be attained and the patient actually failing *qua* the disease—be dead, as I could relate, in two months. An increase in weight without other supporting changes is the great fallacy of arrested patients.

In a large number of my cases the patient has come to weigh more than ever in his life, and this has been so at all ages, even up to sixty. So that the statement is warranted that, in a fairly favorable case, it can be guaranteed that the patients by these methods will go over the top of their previous maxima. Many of these cases have been in the nature of controls, *e. g.*, patient curing for some three years—in sanatorium four times—once before in our own—always infirmary case, lowest weight 85, highest 115; on entrance this time 96¾. Under the care of another doctor with absolute rest, gained one and three-quarters pound in the first four weeks; under my chest work with no other change in the regimen gained nine pounds in the next four weeks—in eight weeks went through previous maximum—continued steady weekly gain till reached 141—still farther gain to 146 at home, and six months later was doing all the work for family of four. This was a case of cavity and of mitral stenosis, not previously recognized. Or 2d—a patient in "san" four years—cavity—two-thirds sputa cup of pure pus daily—skin color of saffron— a poor hopeless derelict, asked the privilege of doing the chest work as she had observed others. For the previous six months her weight had varied from 113 to 117¾. Began at 115; 2¾ gain the first week and in seven weeks made a gain of 11½ with total disappearance of the sputa.

Many other cases that partook of the nature of a control might be related; long time cure cases, or inhabitants of other "sans" in whom it was possible to effect a gain in weight that transcended any figure they had been able before to accomplish; patients who had done their first curing at from seven to fifteen years before and had been practical invalids since, were made to weigh more than ever in their lives. The specifications in these cases are extremely interesting but space will not admit of bringing them in. The fact remains, look where I will, whether to cases in health or to the most devastated case, my use of the chest can be observed stimulating an eclatant gain in weight. Any number of cases have gone 30 to 40 pounds in four months with an increment every single week. Furthermore there have never been bad gaps in the ascending scale, steadiness is characteristic: moreover, and this is very important, the maximum is held and in very many cases a farther increase has gone on at home, and this too under working conditions. A patient with severe haemorrhage—bronchial changes and fine crepitation in all three right lobes, taking cure at home, gained from 153 to 170 in four months. Entered "san" and under breathing (sputa still rosy) ran steadily up in four months to 192, the previous maximum in life being 180. Gain continued after leaving and he put on his last three pounds after being at his old work as toolmaker for a month—reaching maximum of 207.

But weight is but a part of the whole picture of improved nutrition. The nutrition of muscles is likewise spurred up, and trapezii pectorals and muscles of the chest in general, which have been atrophied, are restored. Undoubtedly in the gain of weight a large part is played by improved assimulation of food and by better liver action. At all events it is the universal testimony that constipation disappears and everybody knows that bug-bear in Tb. The actual churning up of liver, stomach, spleen, and intestines, by the use of the lower chest and abdomen, must play its part.

EFFECT ON LUNGS:—This is of the most positive self-evident character. First the waste places are cleared up. How much of secondary processes there is in the Tb. lung—oedema, simple bronchitis, atalectasis, pneumonic transudate, emphysema, etc.—Latham's Mixed Phthisis. Tubercle in itself plays but a small part in the active pathology. Especially is this so in the lower lobes where relatively little tubercle is found. Now even after a short period of chest use an improvement in lower lobe signs is evident. There has been absorption with replacement by air and functioning vesicles. Consequently the first item is improvement in the percussion note. It becomes fuller, deeper, more relaxed—a gathering vesicular breathing follows. After the backs come the fronts and finally an improvement in the very citadel—the posterior portion of the upper lobes. On the sound or relatively sound side, the strengthening of vesicular murmur and percussion is equally marked. In short many cases show a quick approach to conditions that are not only normal but of the finest type. Let me repeat, improvements are actually demonstrable and do not have to be guessed at or surmised.

EFFECT ON THE HEART:—Since the object of our chest work is primarily the influence over the circulation, evidence along these lines ought to be sought for, and be so obvious as to be easily found.

First there is the general color. Here an improvement can be secured almost at once. Said a well experienced Tb. man, when, after three months, a group of these cases was called to his attention—"What impresses me is their color—they don't look like Tb. patients." Cyanosis, which however is rare in pure Tb. but points mostly to heart complication, is rapidly changed over into rosiness, and sluggishness of flow replaced by celerity. Patients often talk about feeling warmer and having more ability to resist cold, as a result of improved surface circulation. A further evidence is in improvement of wind. When the patient comes to make demand on wind, they find they have it. Wind means heart accommodative power.

EFFECT ON THE HEART ITSELF is almost magical. The heart in Tb. deserves much more study than is accorded it. It is even more important than the lungs. Given a good heart and one may have a mighty bad lung. There is some change in practically all hearts—from unbalancing of sounds at apex, through dilated conditions and displacements simulating mitral stenosis, to actual mitral stenosis, which is far more common than is supposed. Under use of the chest the heart changes in simply marvelous fashion. It slows up and that in short metre; drops from 130 to 80 are common enough: the first sound gathers strength and accent: auricular pulsation and other high beating disappear—the heart comes down in position. This is what we should expect because the use of the chest produces an equalization between the major cyclosis and the pulmonary—hence a restoration of balance. This I hold to be one of the chief and most valuable influences of this method.

EFFECT ON CONTOUR AND DEVELOPMENT OF CHEST:—Nothing has been more surprising than the changes the methods have been able to effect in general physique. That lower chest work should have been able to produce, say an increase in girth of five inches of upper chest—or double a depth axis antero-posteriorly, subclavicle to scapula, was even a shock. But such is the fact—and not one patient that cannot demonstrate something of this. Clothing is tight or outgrown. The patient of 207 pounds above mentioned went from 38 to 43 size coat. Patients come to get a much better carriage and poise. A very noticeable example was in a young man, 3 years in "san." One side of chest caved in from an old process, probably empyema with spontaneous perforation. Three boxes of sputa—marked cyanosis and disturbance of circulatory balance—marked curvature of the spine—extreme clubbing of the fingers. Patient could shut off radial pulse by fixation of shoulders. Under a year of chest work an absolutely new physique was established, chest became practically symmetrical, spine straight, color fine, clubbed fingers disappeared; threw away his sputa cup; worked as orderly six months in complete comfort and has worked for the past year full time in a machine shop with no set-back. We have insisted, in speaking of an increase in weight, that we reckoned it only one part of general nutrition. This is proven by its being more generally distributed. The fat element does not seek points of election as abdomen and hips but is parcelled out with great balance—there are no pendulous abdomens as I have just seen in a patient gaining 40 pounds by rest cure.

EFFECT ON GENERAL SYMPTOMS:—Appetite is very much stimulated—Cough and Sputa diminish promptly and remarkably, in many cases disappear altogether. Patients gather much energy and vim. They tell you they feel their chest—pain in chest is relieved. There has never been any complaint of this method producing pain. Patients quickly lie on either side or on their backs as not before.

What we see in all these cases is the power of the chest to correct itself when allowed the liberty of full physiological use. There is present this constant effect, perfectly obvious and always in evidence. When this change in contour is combined with a stimulation of general nutrition as evidenced by increase in weight, improved muscular tone, heightened color, general enhancement of vitality, it has been possible to produce some really fine physiques in some pretty bad cases.

There have been many post-effusion pleuritic cases under observation—These may have been tapped or quite as often may have been of the sneaking order with long continuance. These present almost invariably a marked contraction of the lower chest on either side. With these cases it is perfectly feasible to procure an ever increasing symmetry.

GENERAL EFFECTS:—Good use of the chest is a great tranquillizer for anybody—for the tubercular it is equally a great sedative. Tb. subjects seem to be endowed with a special nervous energy on which they live and which permits them to carry on a long time in spite of ever increasing illness. Here is an old cure case of seven years standing, in Sanatorium three of these years and curing at home the rest of the time—for last three months temperature as high as 101. Very excited nervous system; full of talk and the excessive false pep of which Tbs. seem to pump themselves so full. A large cavity in right upper, smaller one in left, very dilapidated chest—slats—weight 112—6 feet tall—wide heart, right dilated—pulsation in every L space from 1st down and in R 4th and 5th— P. 130—R. 30—In a few weeks under chest work temperature had left and it was possible to count his pulse 80 and his respiration 11—there was only normal apex pulsation; he also came to weigh 3 pounds more than ever in all these 7 years of cure and Sanatorium life—He was tranquillized.

In giving the patients a definite piece of therapeutics, one that they can watch and, happily, see results from, we are offering one of the best cures for ennui, that other disease that afflicts. Especially because it takes the form of energizing are they in turn taken with it and the effect on morale is often immense. A shack full of patients offer the physician merely a pleasant social round. And their ambition is stirred and stimulated. They see themselves taking a step nearer to that greater energizing that will bring them back into life. General rest on the contrary I have seen pursued to an extravagant and very inconsistent extreme. While in place in a certain class of cases, it is entirely misplaced for others—especially the older cases, (and do we ralize quite how many of these there are,) where nature herself has already undertaken the task to establish a balance. It is a pity if a well-meant piece of therapeutics like rest can degenerate into namby-pambyism—if a patient gets so that he is afraid to wink an eye—if it is so prolonged as to produce ennui—If no notice is taken of the principle that for the human, energizing begets energy, up to the point of conservation—That Fatigue is of, by, and from, the nervous system—That a patient can work as hard in bed as out.

As to local rest for the lung—it seems unreasonable to compare the lung to a broken bone; the lung is an inseparable part of the organic life—the bone can be isolated. And it is not possible to keep the lung still—it refuses to surrender its elasticity—Two conditions only bring it to terms—a chest full of fluid and a pneumothorax with very free access of atmospheric air under pressure. To talk of collapsing the lung by a few hundred cc. of air or N., immediately subject to absorption, seems absurd.—And then too the question may be raised as to whether there is not too much talk about fibrosis and scar tissue as sequelae of Tb. Connective tissue is perhaps an antecedent condition. I have not in many autopsies seen a real scar in the Tb. lung except as originating in the pleura with an extension of fibrous tissue from without. Tb. lesions seem to me to cure in good part by the absorption of secondary products, by calcification of tubercles and, in cases of destruction, by delimitation.

And it might be fairly asked if this method of mine does not even afford rest to the diseased portion. The lower third of the lung is roughly equal to the upper two-thirds. Why not the use of this lower, spare the upper; or proper, in a sense exaggerated use of three-quarters, spare the one-quarter. I do not prefer to take this view relying as I do upon the general influences on the circulation, but there is something to substantiate it. Nature does precisely this. The old cases of cavity that have often lived through a long life show very marked hypertrophy of sound lung. A case of spontaneous pneumothorax that I remember which had that rare ending of healing by complete collapse of the chest—had an hypertrophy of the other lung to at least 50% increase. It is interesting to recall that this boy was one of my breathers and exercisers fifteen years ago and lived on six years before Tb. attacked the sound lung. I am not so sure that results in posture treatment and in artificial pneumothorax are not along this line, even perhaps suggest a greater use of the sound side in procuring aspiration; as in my lateral movements. Low breathing does actually produce a decided lessening in the volume of vesicular breathing above.

But the great argument against local rest is that there is something in the chest besides lung and that is—heart and great blood vessels. Here certainly is the citadel of vitality and I hold, and experience confirms me in the view, that prolonged rest can be quite inimical to an increase of vitality and stamina, on this account. Given good blood and set it on its way and we have in large measure the condition known as Health. A flexible chest is the Master Key to Health. Man is as old as his costal cartilages, rather than as his arteries. Keep them free of lime and degeneration and the arteries will remain likewise. Tb. is a general disease and so ought our Therapeutics to be. We know that the lung can tolerate a lot of Tb: the task of Therapeutics is to make the system tolerate it.

In taking leave of the subject I have to apologize for reducing to narration a large matter that lends itself far better to demonstration and a clinic. Photos, before and after, would be didactic, but are lacking. The experiment I may claim has been entirely unique. While others have perhaps used breathing and "breathing exercises" these have not been so far as I know in any sense like mine. Ours has been a well-sustained, consistent experiment, not reported on till much evidence had accumulated. To indulge in a personal allusion! My novitiate in chest was in a five and one-half years residence in the Boston City Hospital, many years ago. Where, in the midst of a rich chest clinic, not equalled this side of the Atlantic, we had a generous sprinkling of Tb. with autopsies. That intensive training has stood me in good stead and many years observation of the chest both in health and disease has convinced me that many of our fundamentals are awry or else wrongly conceived. I may then perhaps be exculpated from the charge of pursuing a fad, which might be defined as a notion divorced from reason. There is nothing of that in this experiment.

THE FOLLOW-UP:—I have made the best effort to keep in touch with patients. Since many of them are nearby residents, some at my elbow and under frequent observation, this has been reasonably possible. I feel sure that the method provides in favorable cases a means of so fortifying the system that we can get the patients back into life, which means friends, family and the dollars; but what is more, into their previous employment. This is not to be oblivious to the fact that Tb. is a long range proposition full of fallacies and that the lapse of much time is needed for judicial conclusions. A patient, 40, in whom two of us independently diagnosed a cavity was made to weigh the most ever: now weighs his very highest: has never lost a day in the last two years: 12 hours daily as a huckster: a very fine user of chest—signs very limited and seen at time of writing.

The case mentioned as weighing 207, now 23 pounds over his maximum, seen at time of this writing has no cough and has worked at his old occupation of tool maker steadily ten months, not losing a day; ten hours a day and extra. A man 52—maximum 202 at 18, gangrenous cavity, several large haemorrhages (1½ pints)—infirmary case, was made to weigh 207— at time of writing, weight 197, has worked as a stoker ten months without losing a day. Has no cough. This man was not given the chest work but began by imitating another pupil.

To bring the matter up to date, a few words as to several private cases. A nurse—2 years Tb.—Well defined development of infiltration in posterior part of upper—had to give up work which had been fitfully pursued; instructed in chest work—rest in country—gain every week for four months. Final 157—12 pounds above previous maximum—Exactly same figure from November to May—now at work two months—weight 153—great increase in chest girth. Two school teachers—each prepared for Sanatorium by specialist in Tb.—one not accepted at Gaylord as too far advanced—foci in three lobes. Both subject to same regimen at home. Stated rest but freedom of house, moderate milk—both seen first in January, 1924—out in two months—one in three months 113¾: previous maximum 92—increase of five inches in chest. The other out in two months, in four months 135, previous maximum 118. These patients had breathing work and in about two months chest movements. The physique in these cases quite changed. They both have made application to return to teaching and are able to in my opinion.

Discussion

Dr. Henry D. Chadwick, Westfield: In discussing this paper—the active use of the chest in pulmonary tuberculosis—I wish to fall back upon the well recognized tripod of treatment—rest, fresh air and food. During the last twenty or thirty years for instance stress upon the different legs of this tripod has varied a great deal. First we considered fresh air as much more important than we do at the present time. Then later on we passed through the period when food was considered the all important element in the treatment of tuberculosis. But for the last few years the stress has been laid upon rest. It seems to me that that is quite proper. Rest is the important element in the treatment of tuberculosis. There is evidence—there is a basis for that. We have to consider the best method of curing tuberculosis. Until we have a specific for tuberculosis there is nothing better to fall back on. What does nature do when left alone to cure a case of tuberculosis? We know that many many cases are cured by nature without advice from a physician. We have frequently seen cases coming in for diagnosis that have had tuberculosis many years and have gone through a fibrous stage in which a large part of one lung may be completely disabled. Now nature brings about rest to the lung by contracting the thorax. You find in these cases that the ribs are drawn together—the spaces are very small between them. There is a restriction of the motion of the diaphragm. The diaphragm is high and sometimes fixed. Then again pleural adhesions form. Nature has brought this about by making an attempt to compress the lung—to limit its use. That, it seems to me, is what we must attempt to do in advising the person who has tuberculosis—to limit the use of the lung as much as possible, instead of attempting to get them to use it. If we attempt to develop the chest in the case of pulmonary tuberculosis we are going to undo what nature is trying to do. I think we should emphasize the necessity of resting the lung. That is why we keep patients in bed. That is what we are doing when we use artificial pneumothorax. It is what we do when we put on jackets, and what we do when we use weights on the chest—three recognized methods of compressing the lung and aiding nature. Dr. Knopf's method, about which he has written and demonstrated so many times, of developing abdominal breathing, is something along the line of which Dr. Delano has spoken. I have seen Dr. Knopf's demonstration. I have one or two patients on whom I attempted to carry it out. I could see no good effect from it. Practically I doubt its applicability. It seems to me that it is not a question of breathing a certain number of times a minute. We have to have a certain number of cubic inches of air in order to exist. Whether we take that air in breathing thirty times a minute or ten I think makes very little difference, as long as we do not put any strain upon the diseased pulmonary tissue. There is always a certain amount of healthy pulmonary tissue which is very elastic. If we use that good part of our lung in our breathing and fail to expand the diseased part of the lung, it seems to me we are accomplishing what we are after. If we have to use the elastic part of the lung thirty times a minute in order to leave the diseased area at rest, that is what we must be content to do, it would seem to me.

Nature, in addition to the contraction of the chest to prevent deep breathing, causes the formation of fibrous tissue to wall off the diseased areas and prevent their breaking down. If we use force in breathing and strain those air cells we are going to tear down some of the protection that nature is building about the diseased area. If possible we want to prevent that breaking down and the consequent discharge of bacilli into the system. If we are expanding our lung forcibly we are in great danger of spreading some of the bacilli into some other parts of the lung which are not yet diseased. That is another reason why I do not attempt to develop the diseased lung. I want to put it at rest and keep it at rest as long as the individual lives.

Dr. W. R. P. Emerson, Boston: What I have to say is particularly in regard to the underweight, under-nourished child. There has just been a report from Davenport of the Carnegie Institution concerning slender and very slender children and their liability to tuberculosis—a study of 1500 with a control group of 10,000. The result found is that the slender or very slender youth is from six to twelve times more in danger of tuberculosis as compared to the child who is up to average weight for height—and from three to six times more in danger of other respiratory disease and of nervous exhaustion.

I have been working with the undernourished group who are called pre-tubercular, although, as you know, they are *pre* other things, and have been trying to get these children from the danger zone of underweight up into the zone of safety. In health work it is so easy to talk and so difficult to demonstrate. If we report an individual case it does not help very much, because some patients get well in spite of us. In taking a group of ten, twenty, fifty, five hundred or a thousand undernourished children I have, as it were, issued a challenge to the advocates of corrective exercises to try out some of their methods in these groups. Of course, corrective breathing is a form of corrective exercise. But with our undernourished children our records show, and I have not found anybody to prove the contrary, corrective exercises help them hardly a jot. I think that the explanation is that these pre-tubercular children, as we call them, are carrying a heavy load. What is the load? It is the load of nutrition, growth and exercise. If they have a tuberculous infection there is also the load of toxemia and inflammatory processes. I have brought a chart to show that infection is a load. Here is a boy who gained in weight from 124 to 132 pounds—going up steadily. He then had mumps and what happened? There is a loss of ten pounds. I can bring you hundreds of charts to show that where any infection occurs, however slight, down goes the weight. There is the load of the reparative process plus the toxemia, that interferes with absorption. It is not what we give a child—it is what he absorbs. We know with infants that we can double and redouble the amount of food; digestion may go on, but in the bowels and stools we may find unabsorbed products. It may go into the blood but it is not absorbed. If a child is toxic we do not get anywhere. Gaining is a nip and tuck business. For healing and gain we need to conserve his energy by rest.

You know there are so many simple questions to which we cannot get an answer. For example, how can we measure fatigue? I will ask anybody to give me a measure of fatigue. No one has an accurate measure for it. The nearest answer I have perhaps is in the reaction of a group of children in a nutrition class. If you try to get them to gain and you lessen their occasion for fatigue, they begin to gain. Here is a chart showing the weight curve of a child at the Massachusetts General Hospital. This girl has a fine mother. Both the mother and the child are willing to do anything I can tell them in order to have the child gain. It is a challenge to me. They come week after week. The girl is 10½ years old. I try to tell her what to do. There is her average weight line. She goes up a little and then goes down a little. Then at the end of twenty weeks she is practically no nearer the average weight line than when I began. Neither this child nor the others in the class improved on taking corrective or postural exercises. When there is no gain, what are you going to do? This twenty weeks is a long time. At this point I said to the mother, "I believe your child's program is more than she can handle. Let us take the bull by the horns and put her to bed or the next thing to it. We have got to keep her happy but she is interested to gain. Have her stay in bed in the morning. Give her her breakfast in bed; have her get up at 10:30; go back again and rest before her midday meal; in the afternoon more rest. Have her stay practically in bed for a whole week." She gained one and a half pounds. The average rate of gain is two ounces. She thus made twelve times the average rate of gain and since has continued a steady increase in weight.

I am more and more impressed with the need of rest; with the need of analyzing the 24-hour program—not one item but the whole program of the child. I reported last year this program applied to a group of 28 children in the preventorium at Grand Rapids. We have been able to get that whole group, not only in two or three selected cases, but the whole 28 to gain at the rate of 2700%, 27 times the average rate of gain of the normal child. This is a preventorium caring for about 15 children. We have a matron who understands children and makes it a home. The children are happy. When they take the rest period they keep their charts in their minds. We get their coöperation. We are thus able to increase the efficiency of the preventorium three and four times.

Corrective exercise, I am sure, for the underweight child is a mistake. You are just spending energy that should be used to fight the battle. It may be answered that breathing exercises do not occasion fatigue but we have to remember that just sitting up doubles the metabolism. A child's crying will increase three or four times the amount of energy expended. Underweight children should have as near complete rest as you can give them. When their weight gets up to the average then gradually give measured exercise. If we could only measure exercise and its effect on the child just as we can estimate metabolism, we would, I believe, make distinct progress in the treatment of so-called pre-tubercular children.

January on the Second Medical Service, Boston City Hospital

BY FRANCIS W. PALFREY, M. D., VISITING PHYSICIAN

The Medical Wards of the Boston City Hospital receive patients in such great variety that the author has long felt the desirability of more frequent brief reports of selected unusual cases. The Second Medical Service, during the month of January, 1924, having presented even more than the ordinary number of such cases, the following account is offered of observations during that month which have seemed to him to lie outside of common experience.

The notes on each case are made as brief as possible, in order that the features of chief importance may not be obscured by unessential detail. Each patient is referred to by the Hospital admission number, followed by the sex and age.

Among cases in the wards on January 1st were the following:

Pulsating Abscess of Chest Simulating Aneurysm*. 468,916, male, 27, a Portuguese negro, had been admitted because of a pulsating prominence over the region of the heart, which had been assumed, on previous examinations, to be an aneurysm. No reliable history could be obtained. The patient was somewhat emaciated, and had a slight irregular temperature. He had moderate precordial pain, but no dyspnoea or cough. At the level of the fourth cartilage, extending transversely to the left from the median line, the chest surface bulged forward in an eliptical area about four by three inches in its diameters. This projection from the level of the chest wall pulsated visibly and still more markedly to the sense of touch, in exact time with the ventricular systole. It gave the sensation, on palpation, of fluid pulsating firmly just beneath the deep fascia. There was no surrounding induration; it was not possible, without exerting more pressure than was considered safe, to feel any rib or cartilage beneath it. The heart was not enlarged and gave no abnormal sounds or murmurs. X-ray examination showed a large pulsating opacity both above and behind the heart that had been considered to be an aneurysm. The Wassermann was negative. There were points in the examination, however, which seemed not wholly consistent with what one expects to find in aneurysm. The force of the pulsation, and the apparent tension of the fluid within the pulsating body, seemed to be less great, both in the systole, and still more so in diastole, than would occur in an aneurysm in a patient with a normal systolic and diastolic bloodpressure, which this man had. This might have been explained by assuming an arteriovenous aneurysm, but in that case one would expect the time of the pulsation to be somewhat after the heart-beat, whereas here it began exactly with the first sound. The absence of induration surrounding the fluid pulsation was atypical for aneurysm, as was the negative Wassermann. The position also was unusual for an aneurysm, but this did not weigh heavily, since dissecting aneurysms often present in unexpected places. After consultation with other members of the Medical Staff, it was concluded that a pulsating abscess was more probable than aneurysm, and furthermore that if aneurysm was present the condition was hopeless unless it could be treated by wiring, which also would involve penetrating its wall. Exploratory puncture was therefore performed, with a small needle, inserted obliquely to the surface. Pus was obtained. Injection of the abscess cavity with sodium iodide and then taking a lateral X-ray showed that the abscess which gave the pulsation was one not larger than a lemon, lying in front of the pericardium, and not (at least at that time) communicating with the larger mediastinal shadow. A guinea pig injected with the pus died of tuberculosis. Cultures from the pus gave no growth. The case, then, seemed to be one of mediastinal glandular and probably perichondrial tuberculosis, and was treated as chronic non-pulmonary tuberculosis.

Peculiar Oedema from Intrathoracic Carcinoma. 467,249, female, 37. This woman had been apparently well until a disease diagnosed as pneumonia three months before admission, recovery from which seemed never to have been complete. Six weeks before admission she had noticed increasing soft enlargement of the right breast, without pain. At about the same time she had noticed increasing shortness of breath, which had finally become disabling. She had noticed also swelling of the right side of the neck and face. As seen on admission, she was stout, cyanotic and markedly dyspnoeic, with swelling of the right side of the face and neck. She had some cough but little sputum. Her temperature ranged from 98 to 103. On examination her right breast was found to be about twice the size of the left one, but soft throughout; it pitted on pressure, as did later the right arm and hand. The right pleural cavity was filled completely with fluid, displacing the heart toward the left. Above the right clavicle were several distinctly enlarged glands. X-ray showed complete opacity of the right chest and displacements as from the pressure of fluid. Aspiration on five occasions, the last time using an air-replacement method devised by the author for miliary hemothorax cases, yielded a total of 5,270 c.c. of clear fluid with the characteristics of a transudate, not an exudate, except that there was a small amount of blood in the last sediments. Sufficient emptying, however, was never obtained to make possible the securing of additional X-ray evidence. The diagnosis lay between a venous thrombosis of inflammatory origin, involving probably the azygos vein, and a mediastinal tumor. The history and the presence of fever favored the former. Excision of a gland of the neck, however, showed carcinoma. As time went on, the hydrothorax seemed to diminish, but the dyspnoea increased, with a stridor suggesting tracheal compression. Death occurred January 18th; no autopsy. No clinical evidence was found to identify the origin of the tumor.

Pain in the Back with Destruction of a Lumbar Vertebra, Cause Not Determined. 468,976, female, 68. This patient, on lateral X-ray examination, was found to have almost complete destruction of the body of the first lumbar vertebra. Dr. Frederick J. Cotton who saw her repeatedly in consultation gave the opinion that while this picture is commonly attributed to metastatic carcinoma, in his belief there are other possible causes not yet identified. No evidence of primary carcinoma was found. In bed with support to the lumbar spine a fair degree of comfort was attained. Strapping with plaster gave further relief. The application of a

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[*] Reported by Dr. George Kahn, J. A. M. A., June 14th, 1924.

plaster jacket had to be deferred because of an intercurrent attack of bronchopneumonia.

Hemorrhagic Pleurisy, Tuberculosis? Malignant? 467,247, male, 51. This patient had a persistently recurring effusion of the left pleural cavity, from which large amounts of dark bloody fluid were withdrawn repeatedly. The temperature was irregular, sometimes moderately high. Through the mouth the diagnosis remained in doubt, guinea-pig inoculation having been omitted through oversight. The temperature tended to diminish and the fluid seemed to subside partially. In the absence of evidence of progressive new growth, and in view of the fever, tuberculosis was considered probable, but this case illustrates the usual difficulty of distinguishing between tuberculosis and neoplasm as the underlying factor in hemorrhagic pleurisy.

Aestivo-autumnal Malaria. 468,759, male, 26. This patient, a sailor recently from a southern port, had a moderate continuous fever with general febrile symptoms consistent with mild typhoid. Blood examination, however, detected the parasites of aestivo-autumnal malaria, and failed to give evidence of typhoid fever. In this case quinine succeeded promptly, so that resort to arsphenamine was unnecessary.

Venous Hum Simulating the Murmur of Patent Ductus Arteriosus. 469,124, female, 34. This case is included to call attention to a little-mentioned pitfall of diagnosis. The patient had a severe anemia of the secondary type, suspected to be due to an infective endocarditis. Two eminent consultants who examined this patient found in the pulmonic area a continuous murmur, loudest in systole, which they attributed to a patent ductus arteriosus. On following this murmur upward, however, it became plain that the sound heard in the pulmonic area was only a loud venous hum in the vessels of the neck transmitted downward into the chest. The author has been interested in this phenomenon as a source of error in diagnosis since he was once able to demonstrate it to the late Prof. R. H. Fitz in a similar case.

The following patients are selected from among the admissions to the Service during the month of January.

Aneurysm of the Innominate Artery with Tracheal Obstruction. 469,637, male, 39. This patient, a negro, was admitted on account of increasing dyspnoea, cough and stridor, of three months' duration. For two months there had been pain in swallowing. The dyspnoea was great, even at rest in a sitting position, and was accompanied by a marked whistling stridor apparently of tracheal origin. The voice was husky but not absent. The temperature was moderately elevated (99°-101°), and considerable amounts of purulent sputum were being raised. On examination no abnormal pulsations or masses were felt in the neck or chest, but there was a marked tracheal tug. No pulse could be felt in the right radial, brachial or subclavian arteries. There was dulness on percussion over the right sternoclavicular joint, not present on the left, but this dullness did not extend appreciably outward or downward over the lung apex. There were no other noteworthy findings in the general examination. A "portable" X-ray plate showed no excess of supracardiac shadow or other abnormality. Laryngologic examination by Dr. L. M. Friedman showed paralysis of the left vocal cord, and diffuse inflammation of the tracheal mucous membrane, but no cause of obstruction was visible. Blood taken on admission showed later a positive Wassermann. The patient was obviously dying of exhaustion due to a low obstruction of the trachea. The diagnosis lay between aneurysm and an abscess pressing upon the trachea. The author leaned toward the latter because of the fever and because of the seemingly exact parallel between this case and one seen in the Army, with autopsy revealing an abscess beside the trachea. In consultation with Dr. E. H. Place it was concluded that any operative attempt to relieve the obstruction would only hasten death. The autopsy showed an aneurysm of the innominate artery the size of a hen's egg, with a diffuse purulent tracheobronchitis.

Staphylococcus Aureus Pyemia, with Miliary Abscesses Especially of the Lungs. 469,906, male, 30. This man presented on admission the clinical picture of a very severe pneumonia, with cyanosis and urgent dyspnoea, except that neither physical examination nor "portable" X-ray could reveal any consolidation in the lungs. Autopsy showed both lungs riddled with innumerable minute abscesses, due to Staphylococcus aureus, and fewer similar abscesses in other organs. No evidence was found to even suggest a source of the infection.

Diabetes Insipidus. 470,325, male, 14. This patient, a boy somewhat feminine conformation, but otherwise of not abnormal development and nutrition, complained of excessive thirst which had come on gradually about a year ago. In twenty-four hours he drank 325 ounces of fluid and voided a total of 215 ounces of urine. Just as pituitary treatment was instituted he developed an attack of severe pain in the right lower quadrant of the abdomen. In consultation with Dr. H. M. Clute it was not considered safe to leave him without operation; the appendix, however, did not prove to be conclusively abnormal. This event deferred his transfer to the Thorndike Memorial Laboratory for more extended study.

Capsular Cirrhosis with Chronic Heart Disease. 470,712, female, 57. This patient was admitted because of ascites which had required repeated tappings. She was found to have chronic mitral disease; adhesive pericarditis could neither be proved nor disproved; the symptoms and signs of cardiac insufficiency, however, were so slight as to make it improbable that the heart alone was responsible for the ascites. After tapping, the spleen was found to be markedly enlarged. Alcoholic cirrhosis could almost certainly be excluded. Therefore, and in the presence of heart disease of inflammatory origin, the ascites and the splenic enlargement were attributed to chronic perihepatitis or capsular cirrhosis.

Meniere's Disease. 469,764, female, 59. This patient, admitted to the Hospital for the second time, had had for three months extreme dizziness of sudden onset, which made it impossible for her even to sit up in bed, standing, walking or sitting in a chair being entirely prevented. Various treatments tried in consultation with the Aural Service, including lumbar puncture, failed to give any relief.

Trichiniasis. 470,435, male, 12; and 471,152, female, 33. These two patients were from unrelated sources. The mother of the first was under treatment for the same disease at another hospital, and the father had just died of "typhoid fever." This patient on admission had a high temperature, and had such extreme pain and muscular rigidity involving especially his neck that a lumbar puncture was performed immediately to exclude meningitis. The fever and the muscular pain both subsided after admission, both being practically absent on the fourteenth day of the disease; but after that irregular elevations of temperature continued to appear for three weeks more. The second case was in marked contrast to the first in that she had but little fever or pain, whereas oedema of the conjunctivae and eyelids was unusually conspicuous. The first case had no visible oedema of the eyes. Since in both of these cases the circumstances made positive diagnosis important, the disease was proved in both by muscle excisions, parasites being demonstrated in both, but more numerous in the first case.

Alcoholic Wet Brain; Recovery After Use of Cornutol (Ergot). 469,906, male, 30. This case is mentioned as one instance of a number so treated by Dr. George Kahn, House Physician on the Service. Ergot was formerly used more in delirium and in meningitis than it has been of late. This patient, like others treated by Dr. Kahn, was in a stupor following delirium tremens which seemed as if it would prove fatal. He was given cornutol (N. N. R.), a preparation of ergot for hypodermic use, one ampoule every four hours, four doses in all being given. Eighteen hours after institution of this treatment the mental and the general condition had improved distinctly, and he recovered.

Brass Pin in Myocardium. 469,904, male, 54. This patient was admitted in the last stages of what plainly would prove to be a terminal infection, bronchopneumonia being considered the probable diagnosis. The autopsy revealed a purulent pericarditis. In addition, imbedded in the ventricular myocardium was a brass pin with a broken hinge at one end, evidently part of a piece of cheap jewelry. Since there was no history to explain the presence of this pin, and since no wound of entrance could be found, it was suggested that the pin might have entered long before, doing no harm unless it may have served to focus the last general infection in the pericardium. Delay in receiving permission for the autopsy made the examination less satisfactory.

Of cases on other Services seen in consultation, the following two are noteworthy.

Pain in Right Leg from Metastatic Tumor Involving Lumbar Plexus or Spine. 467,498, male, 57. Two months after the removal of a hypernephroma on the left, the patient began to complain of increasing pain and weakness in both legs especially the right. He was found to have a large tumor of the liver, and, deep in the right lumbar region, nodules which were taken to be retroperitoneal metastases. The muscles of both legs, particularly the right, were markedly atrophied. It seemed plain that the symptoms in the legs were due to involvement of nerves, either the lumbar plexuses or the cauda equina, in metastatic new growth.

Large Ovarian Cyst Simulating Ascites. 469,650, female, 59. The examination of the abdomen seemed so typical of free fluid in the peritoneal cavity that the author and others made the mistaken pre-operative diagnosis of abdominal effusion, most probably due to malignant disease of the left ovary, but tuberculous peritonitis not excluded. Operation by Dr. F. L. Good showed a single enormous ovarian cyst.

The following patients were, during the month, transferred to Surgical Services for operation.

Malignant Tumor of the Lower Abdomen Unexpectedly Operable. 466,348, female, 42. This patient had a large nodular mass which seemed immovable and probably widely adherent, filling the lower abdomen and pelvis. She was so weak and emaciated that operation was at first considered hopeless. At the insistent desire of the patient and of her friends, however, that something be attempted at whatever risk, operation was finally consented to. Operation by Dr. N. R. Mason revealed that, contrary to expectation, the mass was free, except for a comparatively small pedicle springing from the posterior abdominal wall. Dr. Mason was able to remove it completely. The patient died four days later, but it is felt that the operation came much closer to success than was anticipated. The tumor was reported to be either a hypernephroma or a carcinoma of unknown origin.

Raynaud's Disease. 468,469, male, 21. This patient was transferred for amputation of toes for gangrene.

Chronic Cholecystitis and Gall-stones, with Prominent Gastric Symptoms. 468,130, female, 30; and 469,601, female, 57. These two patients had complained of gastric symptoms of long standing, resisting all treatment. After careful study it was concluded that there was sufficient evidence of underlying cholecystitis, probably with gall-stones, to warrant exploration. Operations by Dr. F. B. Lund confirmed the diagnosis in both.

Empyema. 469,962, male, 17. This case illustrated clearly the opinion that has gained ground of late that it is of advantage to defer operation in empyema until the more severe febrile symptoms of the early stages have subsided. The improvement of this patient in the period between the appearance of the purulent effusion and his drainage by Dr. Horace Binney was striking, and placed him in a much better position to stand the operation.

The month's service included 13 cases of pneumonia, numerous cases of other acute infections, heart diseases, digestive diseases for diagnosis, and other conditions. Cases of nephritis and of diabetes were treated by Dr. W. R. Ohler, as on other services.

There were seen 60 patients remaining from the previous month, and 138 new admissions, a total of 198, exclusive of patients on other services seen in consultation.

Acute Appendicitis as a Complication of Scarlet Fever

REPORT OF FOUR CASES BY C. L. THENEBE, M. D., HARTFORD, CONN.

THE appendix is the most frequent and the most vulnerable site of an acute localized infection of the gastro intestinal tract. An inflammation of the appendix is a rare complication or accompaniment of scarlet fever.

A definite toxemia accompanies a scarlatinal infection.* With the body concentrating its energy on combating this toxemia by antitoxin production, it is easily conceivable that during this period of lowered resistance, the bacillus coli or other organism diverging from its usual status in the gastro intestinal tract, may then concentrate upon the appendix for its pathological activity.

There is also a possibility that in certain individuals the toxin, absorbed during a scarlatinal infection, may have more selective activity upon the appendix than the remaining gastro intestinal tract, causing sufficient inflammation to make a fertile field for the growth of the bacillus coli or other organism, thereby aggravating the pathological process.

None of the cases herein described were malignant or septic, so the possibility of a streptococcic hematogenous infection of the appendix is remote, but possible.

A primary streptococcic appendicitis, caused by the organism reaching the appendix by way of the gastro intestinal tract from the pharynx is a possibility but also remote.

During the past four months, 250 cases of scarlet fever have come under my observation. Of these, there were four in which a complication of appendicitis developed.

Case No. I. Hosp. No. 4110. H. W. Private patient Dr. L. Gaucher.** Age 26. Male. He was admitted to the Hartford Isolation Hospital, Jan. 24, 1924. Chief complaint: — Sore throat. History of present illness:—sore throat, malaise, nausea, vomiting started on Jan. 19, 1924. Rash appeared on Jan. 20, 1924. Nausea and vomiting ceased on the day the rash appeared. Sore throat and malaise have continued. Past Medical History:—Negative (no previous attacks of appendicitis). Physical examination on admission:—negative excepting for the presence a nasal septum reddened over normal; an anterior and middle cervical adenitis; a partially desquammated tongue much reddened over normal, with hypertrophied papillae; a markedly congested pharynx and a fading general punctuate erythema more pronounced upon the flexor surfaces (face excluded). Temperature 102.6. Pulse 120.

Clinical Notes:—January 24 to 28 inclusive. Uneventful.

January 29th:—Nausea and vomiting about 1 P. M. Complains of slight abdominal pain, not localized. Palpation of abdomen revealed very slight general tenderness and rigidity.

Jan. 30th: — Vomiting throughout the day. Still slight general abdominal tenderness and rigidity. Rise of temperature from 99 to 103.4. W. B. C. 14,800—80% polys.

Jan. 31st:—Patient complains of severe abdominal pain. Palpation of abdomen revealed a board like rigidity with general tenderness. Prostration also present. Dr. Gaucher asked Dr. Harry C. Clifton and myself to see the case. An acute surgical abdomen was readily agreed upon by all. An operation was immediately performed by Dr. Clifton. Anesthetic: —Local, reinforced by the use of a small quantity of chloroform.

Diagnosis:—An acute perforative appendicitis with a secondary acute general purulent peritonitis was found. An appendectomy was not attempted owing to the serious condition of the patient but free drainage was instituted.

Feb. 24th. Patient was discharged from the hospital after a somewhat stormy but certain recovery. A small discharging abdominal wound was present on discharge. His urine was negative throughout excepting one examination, on Feb. 10th, which revealed a faint trace of albumen with no casts. No other complications of scarlet fever were present. The temperature became normal and stabile on the 25th day after admission. Tenderness was still present in the lower right quadrant particularly about the incision. An appendectomy was to be performed in the near future.

Comment:—This case represents an acute perforative appendicitis with a secondary generalized purulent peritonitis, symptoms of which developed on the 10th day after the onset of the scarlatinal infection.

Case No. 2. Hosp. No. 4207. G. P. Age 17. He was admitted to the Isolation Hospital Feb. 29, 1924. Chief complaint:—sore throat. Present illness started on Feb. 27th:—Malaise, slight sore throat, nausea, no vomiting. On Feb. 29th, he complained of general abdominal pain. A rash was noticed on chest and abdomen. Past Medical History:—negative (no previous attack of appendicitis). Physical examination on admission revealed the following:—The usual septum, tongue, pharynx and gland changes. Two carious upper right teeth. The usual rash. Abdomen:—Definite tenderness and muscular rigidity—lower right quadrant—the rigidity increased with the continuance of pressure. The physical examination was otherwise negative. Dr. P. F. McPartland was called to see the case. An operation was performed immediately under local anesthesia by Dr. McPartland. An acute appendicitis was found to be present. An appendectomy followed.

March 19th:—Patient discharged following his request. Recovery uneventful except for the development of a right maxillary sinusitis which was relieved by extracting the carious teeth. Urine was negative excepting the March 1st examination which showed a faint trace of albumen with no casts. The temperature became normal on the 5th day after operation.

Comment:—This represents a simple acute appendicitis, definite physical signs of which were elicited during the routine physical examination.

Case No. 3. Contagious record destroyed. Accurate data obtained however from my own notes on this case. St. Francis Hospital No. 1260. Age 18. (Employee of the hospital.) She was admitted to the Contagious Infirmary of the St. Francis Hospital on Feb. 25, 1924. Chief complaint:—Sore throat. Present illness:—symptoms in order—sore throat, malaise, nausea. On Feb. 27, 1924, she developed a rash. General discomfort was complained of. Past Medical History:—Negative (no previous attacks of appendicitis). Clinical Notes:—uneventful up to March 4th. On this date she complained of pain in the abdomen which was localized to the lower right quadrant from the onset. Anorexia with slight nausea was also complained of, but no vomiting. Physical Examination revealed definite tenderness and muscular rigidity in the lower right quadrant. The muscular rigidity increasing with the continuance of pressure. The chest was negative. A diagnosis of acute appendicitis was made after eliminating the other causes of pain localized on the right side. The visiting surgeon was asked to examine the patient and was of the same opinion. It was, however, decided to postpone the operation until the process became more urgent for surgical interference. March 31st:—The pain has subsided considerably but there is a dull ache still present (lower right quadrant). Operation by Dr. T. J. Luby. Anesthesia:—ether. Operation:—appendectomy. Pathological Report:—Chronic appendicitis.

Comment:—This case represents an acute appendicitis, the symptoms of which developed about one week after the onset of scarlatinal symptoms. The inflammatory process became chronic.

Case No. 4. Hosp. No. 4293. O. B. Age 17. Male. He was admitted to the Isolation Hospital on the evening of April 3, 1924. Chief complaint:—Sore throat and abdominal pain. Present illness:—On April 1st he noticed the following symptoms in order. Sore throat, headache, malaise, sleeplessness. On April 2nd an exaggeration of these symptoms. He also developed a recurrent general abdominal pain. A rash was noticed on the chest. On April 3rd the abdominal pain became constant and was localized to the lower right quadrant. The sore throat was still severe. The rash became more pronounced and more general. Past Medical History:—Measles, otherwise negative. No previous attacks of appendicitis. Physical examination on admission:—negative excepting the following:—the usual septum, tongue, pharynx and gland changes. A generalized rash, punctate erythema (face excluded). The face was erythematous with pronounced circumoral pallor. The abdomen presented a condition of slight distension with marked tenderness and muscular rigidity over the lower right quadrant No masses were present. Spleen and liver not palpable, no ascites. Temperature 102. Pulse 104. Dr. P. F. McPartland was called to see the patient. Clinical notes:—April 4th.—Operation was performed by Dr. McPartland. Anesthesia:—Local. Diagnosis and operative notes:—Appendix was found firmly adherent to a markedly edematous and inflamed cecum. The appendix was gangrenous and was removed in sections. Drainage was instituted.

April 14—Fecal fistula developed.

May 14—Wound has closed almost completely. The urine was negative throughout hospitalization. The temperature became normal and stabile the 16th day after the operation was performed.

Comment:—This case represents an acute gangrenous appendicitis with an acute typhilitis. The symptoms of appendicitis started one day after the development of scarlatinal symptoms.

My idea in reporting the above cases is merely to emphasize the importance of the medical diagnostic aspect of these cases.

The development of the complication of acute appendicitis as a secondary infection during the course of an infectious disease is not uncommon. I have seen appendicitis as a complication or accompaniment of measles, diphtheria, influenza, etc. There is no reason then why it should not accompany a scarlatinal infection. Probably the few cases of peritonitis reported complicating a scarlatinal infection were secondary to a perforated appendix.

It is not uncommon to see the development of a rash in a patient after an abdominal or other operation. This rash is usually a manifestation of an existing toxemia and is usually not caused by the specific strain of the streptococcus hemolyticus causing scarlet fever. Various vague but descriptive terms have been given to cover this syndrome, i. e. scarlatiniform erythema, infectious erythema, surgical scarlatina, etc. Usually in these cases, a complete picture of scarlet fever is lacking. A drug may also be responsible for the erythema in some of these cases. If a post operative case develops the cardinal symptoms and physical signs of scarlet fever, the case must have been exposed to this specific infection, prior to or during hospitalization. Other strains of the streptococcus hemolyticus may manifest different selectivities for its action. The introduction of the specific antitoxin for scarlet fever should clarify the vagueness which is now present.

Summary:—An acute appendicitis is an infrequent complication of scarlet fever.

It probably represents a secondary infection.

The condition is to be treated surgically as soon as it is recognized.

Spine Fusion in the Treatment of Vertebral Tuberculosis*

BY RUSSELL F. SULLIVAN, M. D.

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VERTEBRAL TUBERCULOSIS or Pott's Disease is by far the most frequent and most serious manifestation of bone and joint tuberculosis.

All the statistical reports on this disease prove the frequency of its occurrence. Records from the Children's Hospital of Boston show that, of the cases of joint tuberculosis admitted to the wards for treatment from 1869 to 1903, there were 2867 cases of vertebral tuberculosis and 3083 cases of all other joints combined. At the same hospital, from 1920 to 1922 inclusive, there were 492 cases of bone tuberculosis and, of those, 243 were tuberculosis of the spine. A study of consecutive cases admitted to the Ruptured and Crippled Hospital of New York City shows that there were 4299 cases of vertebral tuberculosis as against 3,329 of tuberculosis of the hip and 3,222 cases of all other joint tuberculosis combined.

The seriousness of vertebral tuberculosis is evident. The proximity of the lesion to the spinal cord, the dangers of amyloid degeneration of vital organs, and the mechanical changes wrought on the thorax with consequent crowding of heart and lungs, are some of the more important phases of this disease that lead to serious and often fatal sequelae. In the "Orthopedic Surgery" recently published by Jones and Lovett[3] we find the following statements:

"It has been estimated that from 20% to 50% of all cases die as a result of this disease."

"In children the outlook for life is favorable, but there is considerable mortality. In adults the danger to life is real, the mortality is high, and the disease is difficult to control."

The treatment of Pott's Disease is divided into two classes:

1. Non-operative or recumbent.
2. Operative.

Until January, 1911, this disease was treated by only the non-operative method. Briefly, this consists in placing the patient in the recumbent position, preferably on a Bradford Frame, for a period of time varying from one to three years, in the hope that nature will fuse the diseased area in the spine.

Obviously this method presents several disagreeable features that are difficult to control; the period of time necessary to bring about this natural fusion of the diseased area; the difficulty and indeed the impossibility, particularly in children, of maintaining constant recumbency; the mental depression which most patients experience as a result of the chronicity of the treatment; and the impossibility of accurately deciding at just what time (if ever) the disease is cured.

Doubtless many of the readers have had some experience with the above problems in treating such a case and I am certain they will all agree that it is practically impossible to carry out recumbent treatment in detail, and that it is always disagreeable to the patient and unsatisfactory to the patient's family.

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*Read before the Middlesex East Section of the Massachusetts Medical Society, February 27, 1924.

Two operative methods have been devised for the treatment of Pott's Disease:

1. The Spine Fusion of Hibbs.
2. The Tibial Bone Graft of Albee.

It is an interesting fact that both these operations were put into practice within a few months of each other. The first Spine Fusion was performed by Hibbs[2] on January 9, 1911, and a few months later Albee[1] made a report of his operation. Both operators have the same purpose, that is fixation of the affected region, but the result is obtained by exercising very different surgical principles.

Since all of my experience has been with the Hibbs's Method, I shall not attempt to discuss the Method of Albee. However, in passing, I should like to state that the Spine Fusion operation presents several points of advantage over the Tibial Bone Graft that to my mind leave it unquestionably the operation of choice. Briefly these are as follows:

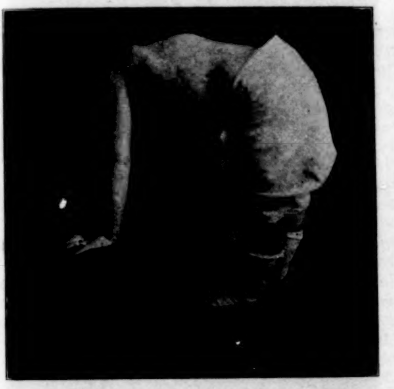

FIG. 1. Case L. W. Showing normal forward bending ability one year after operation.

1. Albee's operation necessitates two operative wounds; the Spine Fusion operation requires only one.
2. Albee's operation requires the use of electrically driven special equipment and skill in the use of this equipment; the Hibbs's Method calls for no such equipment.
3. Albee's Method fuses the vertebrae at only one point, whereas Hibbs's Method obtains fusion of every vertebrae at five distinct points.
4. In Albee's operation there is always danger that the graft will die or will not "take."

The handling of a case of vertebral tuberculosis as carried out by the Method of Hibbs is essentially as follows:

Upon admission to the hospital, radiograms of the suspected area are taken in both the anteroposterior and lateral planes. The area to be fused is determined by examination of these plates. The fusion should include two healthy vertebrae below and two vertebrae above the diseased area.

A Taylor back brace consisting of two steel uprights, a steel pelvic band and anterior canvas apron, is made and fitted. This brace is worn by the patient for a few days before operation in order that he may become accustomed to it.

Preparation of the patient's back is begun the evening before operation. The entire back is shaved and scrubbed with green soap and water. Three day preparations in this condition are considered unnecessary as well as dangerous.

The patient is anesthetized in the usual way. Just before he enters the operating room he is placed in the prone position with the head on one side and a sandbag under the right shoulder. Preparation of the operative field is next carried out with tincture of iodine followed by alcohol.

The technique of the operation as described by Hibbs[2] is essentially as follows:

An incision is made through the skin and subcutaneous tissue from above downward over the spinous processes of the segment to be fused, exposing the tips. The periosteum over the tips of the first two spines above and the interspinous ligament are split. With a periosteal elevator the tips are bared of periosteum for about one-half their length. Small packs of gauze are now inserted to prevent oozing. The periosteum of each tip and the interspinous ligament are split in turn, and the periosteum freed from the bone as described above.

Beginning at the upper end again, with a dull periosteal elevator in the case of children, and a sharp one in the case of adults, the operator separates the periosteum farther forward from the spinous processes and laminae to the base of the transverse processes, exposing the lateral articulation. Each vertebra is treated in this manner from above downward and packings inserted as noted. These packs are very important, as they keep the operative field dry.

Beginning at the upper end again with a small curet, the operator curets the lateral articulations and removes the periosteum and ligament from the adjacent edges of the laminae and bases of the spinous processes. This is done with each vertebra in turn over the entire field, with packs inserted as described.

Beginning at the upper end again with a small chisel, the operator elevates a piece of bone from each lamina and turns it from above downward, its free end resting on the one next below. Each in turn is so treated with packings inserted afterward.

With the operator beginning at the upper end again with a bone forceps, each spinous process is carefully cut and fractured, so that its tip rests on the bare bone next below. The periosteum and ligament which have been split and pushed to either side and lie in practically an unbroken sheet, are brought together in the middle and sutured with interrupted sutures of ten-day chromic catgut. The subcutaneous tissue is closed by a continuous suture of plain catgut. The skin wound is closed with a continuous suture of ten-day chromic catgut. Sterile dressings are applied and an immobilizing brace.

Summary: All tissue other than osseous has been removed from between the lateral articulations, the laminae and the spinous processes, and bone contact is secured at five points of each vertebra—at the lateral articulations, the laminae and the spinous processes—so that with the periosteum closed, we have practically a tube of periosteum filled with live, healthy bone, lying in continuous contact and ensuring a perfect union.

Great care should be exercised in the removal of all tissue from the bones, as the area of fusion will be determined absolutely by the thoroughness and extent of the dissection. If the dissection is made subperiosteally, there is absolutely no difficulty from hemorrhage, and the whole operation may be done with practically a dry field.

Post-operation treatment. The Taylor back brace is applied on the operating table while the patient is still under ether.

Recumbency is maintained for a period of eight weeks, but the patient can vary his position during all this time, lying alternately on one side or the other, on his back, or prone.

Ten days after the operation the skin sutures are removed. From this time on, the brace can be removed daily while the whole trunk is cleaned and rubbed with alcohol to promote normal skin functions.

At the end of eight weeks standing and walking are allowed. The patient is now free to leave the hospital and is advised to center his entire attention on the usual hygienic measures employed in the treatment of tuberculosis. The ideal thing is for the patient to go into the country for a few months, getting abundant sunshine, fresh air, and plain wholesome food.

Very shortly after leaving the hospital the patient can begin to lead a normal interesting life. This is very important from a therapeutic standpoint as it gives the patient the very necessary confidence in his ability to get well and inspires his enthusiasm to carry out more completely the rather long irksome hours of rest, plain food, etc., which are very vital in completely eradicating tuberculosis.

Adults can discard all apparatus six months after the operation. Children should wear protection for about a year.

The following is a typical case of Potts's Disease in which a Spine Fusion was done.

Case L. W. Age 3½.

History. This patient had a tubercular mastoid a year and a half ago. The trouble with the spine was detected ten months ago. A Bradford frame was applied and worn constantly for ten months. In spite of the treatment the disease increased and the cord pressure increased correspondingly.

Examination—November 16, 1922. The general physical examination was essentially negative. The spine was moderately rounded, showing kyphosis from about the eighth to the twelfth dorsal vertebra. All motions were limited by acute spasm. The patellar reflexes were markedly exaggerated. Babinski was positive. There was no ankle clonus and no Koenig. Radiograms showed almost complete destruction of the tenth and eleventh dorsal vertebrae, and involvement of the ninth and twelfth dorsal vertebrae.

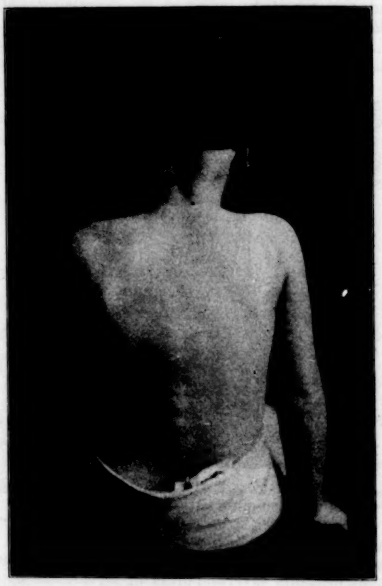

FIG. 2. Case L. W. Showing very slight, if any, atrophy in musculature of shoulders and back one year after operation.

Operation—March 8, 1923. Spine Fusion from the seventh dorsal to the second lumbar vertebra inclusive was done.

May 20, 1923. The patient was up. The fusion was apparently solid. Radiograms showed good bone growth of the fused area in a continuous bridge.

December 20, 1923. There were no symptoms of protective spasm.

January 20, 1924. The general condition was excellent. The brace was discontinued. The patient was apparently cured.

See Figs. 1 and 2 showing the condition one year after operation.

Anyone who contrasts the non-operative with the operative methods of treatment cannot help being impressed with the sound logic of the latter method as a therapeutic measure and the vast saving of time to the patient. If the patient mentioned above had been treated by operation when diagnosis was first made, he would have been saved not only a considerable period of disability but also there would not have been so extensive an area of involvement of disease in the spine.

In spite of the apparent advantages of Spine Fusion, from time to time conservative orthopedists have protested against its use. Their objections, however, have not been substantiated by a reasonable series of operative cases. After careful consideration of them it is my conviction that, in view of the results obtained by Spine Fusion, these objections are very largely misconceptions and based either on ignorance of or indifference to the actual situation.

The first objection raised is that the operation produces shock of a severe degree. I believe the best answer to this statement lies in the fact that, at the New York Orthopedic Hospital, there has never been a death traceable in any way to operation in over 700 consecutive cases of spine fusion for this disease. I personally had the opportunity for more than three years of observing and caring for several hundred cases in the wards of this hospital, and in all that time I do not recall more than six cases that developed surgical shock. These cases yielded promptly to the usual shock treatment.

Therefore, the operation does not produce severe shock or even moderate shock. In fact, it can be very definitely classed as an extremely safe surgical procedure.

The second objection is that the operation interferes with the future growth of the spine and therefore is not applicable to growing children.

The growing centers of the vertebrae are in no way interfered with in this operation. Fortunately careful measurements of the trunk and of the total height of every patient have been kept since the first Spine Fusion was performed in 1911. These measurements are checked up every six months, and now 12 years after the first operation, it can be definitely proved that the growth is not hindered.

The third objection is that it is impossible or extremely difficult to produce solid bony fusion in young children.

More than 20 children under two years of age have been successfully operated at the New York Orthopedic Hospital and at the present time clinical and Roentgenological evidence shows that they have absolutely solid bony fusion of the operated area.

Moreover, a study of ten autopsy specimens of fused spines from both adults and young children has been made by Allen Smith[2] and reported in the *Journal of Bone and Joint Surgery* for July, 1923. This study reveals the information that "the process of bone repair resulting in fusion proceeds much more rapidly in children than in adults, and therefore, children are the most favorable subjects in whom to obtain spine fusion."

The statistical evidence of results obtained by Spine Fusion presents conclusive and unmistakable proof of its absolute superiority over non-operative methods of treating vertebral tuberculosis.

The first official statement of results obtained by Spine Fusion was published by Hibbs in the *Journal of the A. M. A.*, October 26, 1918. This was a report of the end results in the first 210 cases. It was my privilege to have been present when these patients were examined and to have assisted in compiling the results. Of these 210 cases, 157 or 74.7% were definitely cured, 22 cases were doubtful cures, and the remaining 31 patients died. Of these 31 patients all but 5 had been definitely improved by the operation, and their deaths were due either to miliary tuberculosis or to some acute infectious disease bearing no relation to the spine lesion.

The next study of a series of cases was recently made by Hibbs and is about to be published. It was again my privilege to have examined all these cases and to have assisted in preparing the tabulated results. Through the courtesy of Dr. Hibbs I am quoting a few of the results in advance of the formal publication of the article.

There were 163 cases considered.

The age of the youngest patient was 19 months; the oldest patient was 48.

One hundred and twenty-seven were definitely cured; 7 cases were unimproved and 32 cases died. 85% of the cases in this series showed decrease in deformity; this decrease was largely due to the transposition of the spinous processes at the time of operation.

In the two series combined there was a total number of 373 cases examined. The total number of cases definitely cured 284, or 75%. There was 5% doubtful cures; 3% unimproved cases; 17% deaths. The majority of these deaths were from whooping cough, broncho-pneumonia, and influenza.

These results, when compared with the statement made in Jones and Lovett's "Text Book on Orthopedic Surgery" that 20% to 50% of all cases die as a result of this disease, are most impressive. The percentage of deaths in the Hibbs' series is lower than the most optimistic estimate of cases treated by non-operative methods.

In view of the advantages of Spine Fusion over other operative procedures and in view of the statistical evidence showing the large percentage of good results obtained by it, I believe that vertebral tuberculosis, recognized as the most common and the most serious manifestation of bone and joint tuberculosis, is best treated by this operation. It offers the patient his greatest hope for a cure in the shortest possible time, with the least inconvenience to himself and to his family. The operation is extremely safe, comparatively simple, and based upon sound surgical and pathological principles. The various objections to this method of treatment are very largely not borne out by facts. It is most unfortunate that they are raised at all, since hundreds of people suffering from Pott's Disease are annually being deprived of their greatest hope for an early cure with a minimum amount of deformity and with escape from distressing fatal sequelae.

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BOOK REVIEWS

The National Health Series. Edited by the National Health Council. Published by Funk and Wagnalls, New York.

The Quest for Health. James A. Tobey.
The Human Machine. W. H. Howell.
The Young Child's Health. Henry L. K. Shaw.
Taking Care of Your Heart. T. Stuart Hart.
Food for Health's Sake. Lucy H. Gillett.

These five little volumes, of fifty to seventy pages each, represent a portion of the National Health Series which is being prepared by the National Health Council. Written for the laity, in clear and simple style, they nevertheless preserve scientific accuracy. Moreover, they avoid the obvious "writing down" to the level of the reader that defeats the purpose of so many efforts toward education of the public.

Dr. Howell's volume particularly is worth reading. He is so thoroughly master of his subject that reading "The Human Machine" would well repay any of us—not only as a review of the fundamentals of human physiology, but in order to see how facts can be accurately presented without highly technical terminology.

"The Quest for Health" by Mr. Tobey, associate editor of the *American Journal of Public Health*, a sort of running commentary on the physical ills that beset us from the ovum on, contains many valuable references to reliable and detailed sources of information. For the physician interested in public health work it will be of no little value.

The Parathyroid Glands in Relation to Disease. By H. W. C. Vines. Pp. 128. London: Edward Arnold & Co. 1924.

This small volume contains the first full discussion of the activity of the parathyroid glands and presents the material clearly. Unfortunately it does not stop with this exposition but includes a discussion of parathyroid therapy which is neither convincing nor critical. That the parathyroids completely regulate, or that ingestion of parathyroid substance alters, the calcium metabolism, has hardly been definitely proved, and it is, therefore, difficult to evaluate the therapeutic use of this gland in chronic infections, varicose ulcers, gastric ulcers, etc. For these diseases Dr. Vines recommends the use of parathyroid substance—1/10 gr. a day—with calcium, to raise the calcium content of the blood. He claims that improvement results.

Throughout the book a definite attempt is made to maintain a cautious point of view. The first part, where the physiology of the glands is discussed, is very interesting and important. The suggestion for standardization of parathyroid therapy which appears toward the end of the book should be further investigated for it is of fundamental importance to obtain a satisfactory method. The book will interest those studying endocrine therapy.

The Antidiabetic Functions of the Pancreas and the Successful Isolation of the Antidiabetic Hormone—Insulin. The Beaumont Foundation Lectures for 1923. J. J. R. Macleod and F. G. Banting. 69 pages. The C. V. Mosby Co. 1924.

The first of these three lectures gives in brief form a most interesting survey of the development of modern knowledge of the physiology, histology and pathology of the pancreas in relation to diabetes preceding the discovery of insulin. In the second lecture Macleod interprets from the physiologist's point of view the new knowledge gained from experiments with insulin. Banting describes in the last lecture his experiments resulting in the isolation of insulin and discusses its use with patients. It is especially to be recommended to those who desire a brief and authoritative summary of the advances in our knowledge of the physiology and pathology of diabetes made possible by the discovery of insulin.

The Biology of the Internal Secretions. By Francis X. Dercum, M. D., Ph. D. pp. 226. W. B. Saunders Company.

This treatise presents in a very readable way a general account of the various disturbed endoctrine states and is particularly interesting in the discussion of the relation of endocrine disorders to mental disease. While owing to the general and somewhat discursive character of the book it is of little service to the beginner in the field of endocrinology, Dr. Dercum's views are very stimulating. His theories as to the function of the thymus should arouse new interest in this little understood and neglected organ.

Case Records
# of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 10291

First entry. An American masseuse of fifty-four entered November 5 for relief of trifacial neuralgia.

F. H. Her father and mother died of consumption, and many relatives were tuberculous.

P. H. She had measles, diphtheria, scarlet fever and whooping cough in childhood, and frequent mild sore throats. She had been deaf in the left ear since the scarlet fever and had had occasional abscesses in both ears. She had not been really well since a very mild attack of influenza three years ago. She passed the menopause two years ago. For two years she had had marked pyrosis and gas, ending with the onset of the present illness and accompanied by severe dyspnea, cyanosis and stabbing precordial pain half an hour after meals, relieved by belching or passage of gas. She had lost 58 pounds (230 to 172) in two years, probably because of lack of proper food.

P. I. Beginning six months ago she had had increasingly frequent and severe attacks of pain in the right side of the face over the malar bone. Vomiting of food seemed to be an occasional cause of the attacks.

P. E. *Heart.* Apex impulse not found. Percussion measurements as shown in Figure 1. Sounds distant and of fair quality. Action slow. A rough loud musical systolic at the apex but heard best at the base over the aortic area. Diastolic at the aortic. Pulses of fair volume and tension. *B. P.* 100/70-100/65. *Abdomen* negative except for a possible palpable liver edge at the costal margin. *Genitals, pelvic* and *rectal examinations* not made. *Extremities* and *pupils* normal. *Reflexes.* Knee-jerks sluggish.

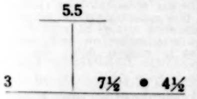


FIGURE 1. Measurements by percussion.

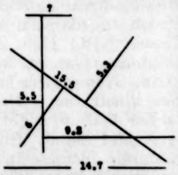


FIGURE 2. Measurements by X-ray.

T. 97.4°-99.2°. *P.* 69-94. *R.* 16-28. *Urine.* Amount normal when recorded, sp. gr. 1.024-1.032, alkaline at one of six examinations, cloudy at two, leucocytes at two. *Renal function* 40%. *Blood* normal. *Wassermann* negative. *Stools* negative. *X-ray.* Heart measurements as shown in Figure 2. Pus pockets from a bicuspid supporting extensive bridge work and apparently communicating with the antrum, which was dull.

November 20 the entire bridge work was removed and abscessed tooth roots were curetted. The pain became less frequent and the patient had good nights until November 30, when severe paroxysms of right supraorbital pain started.

December 3 under ether and oxygen through a small incision in the right eyebrow about 2 cm. of the supraorbital nerve was evulsed.

History of an interval of four years. She remained in a general run-down nervous condition, taking care of an insane aunt, after whose death she was considerably better. Eight weeks before her readmission she found that the area of anesthesia, which had gradually grown less, had completely disappeared. Soon she had sharp stabbing pain in the right eyebrow very similar to the pain at her first entry, radiating out to the temple and to the top of her head like a red-hot spray, the attacks coming twenty times a week. A week before readmission she had all her upper teeth removed with only partial relief.

Second admission, September 22.

P. E. She appeared old for her age. Evidence of loss of weight. Apex impulse of *heart* in fifth space well outside the nipple line. Enlargement at base? (Measurements not recorded.) Sounds of poor quality and replaced by a prolonged soft blowing systolic murmur heard all over the precordia and in the axilla, also a short diastolic murmur at the aortic area. *B. P.* 110/90. *Lungs, abdomen, genitals, extremities, pupils* and *reflexes* not remarkable.

T. 97°-100.1°. *P.* 71-91. *R.* normal. Amount of *urine* not recorded, cloudy at one of two examinations, sp. gr. 1.025, a very slight trace of albumin at one, rare leucocytes at both. *X-ray.* Left antrum distinctly less radiant than right. Outline practically obliterated. Frontal sinus on the left smaller than the right, but no marked change in density. Plates of the mastoid region showed no definite pathology.

October 2 under gas and ether careful search for the nerve was made but no definite evidence of it found. Several fragments of tissue looked suspicious and were excised. Pathological examination showed medullated nerve bundles surrounded by fibrous tissue. The patient was discharged October 7 with the symptoms completely relieved.

History of an interval of a year and three months.

Very little relief followed the second operation. She continued to have attacks of shooting pain lasting two or three minutes, sometimes none for days, sometimes all throughout one or more days. Talking or eating or any movement of the face tended to bring on the attacks. During the attack the eyelid closed and sharp shooting pains passed through it, sometimes making her cry out, always making tears come, with accompanying relief of symptoms.

In October, the month of her discharge, after being hurt in a train wreck she began to have pains and soreness of the chest, with extreme dyspnea and orthopnea. She gradually improved after ten months, and was now able to breathe comfortably lying down, but had dyspnea on exertion. Since the accident she had occasionally had attacks of palpitation. When she lay on her left side she soon became uncomfortable, felt her heart beating forcibly against her ribs and had some sense of being smothered. Last May she had edema of the legs for three weeks, during which time she was in a hospital. In December for about ten days she had some urinary retention, dark urine, and her doctor told her 6% albumin. She now urinated twice at night. December 23 her legs became swollen and itched. In five years she had lost about 80 pounds, sometimes by dieting.

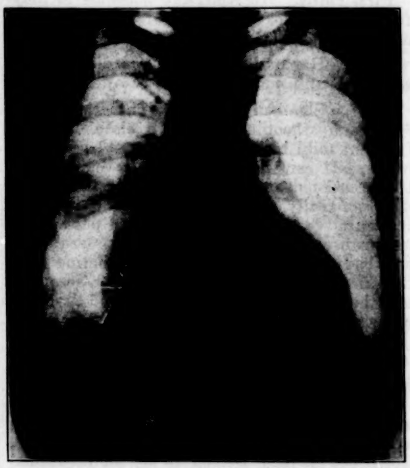
The hospital in which she was treated from the 14th to the 26th of the May before admission reported: P. E. Heart enlarged to the left. Murmur heard at aortic and mitral areas. Sounds weak. Slight edema of the ankles. Dyspnea and cyanosis on slight exertion. B. P. 140/92. Arteries thickened. During her stay in the hospital she was very short of breath and quite purple on the least exertion. Had several severe attacks when pulse became imperceptible and body very cyanotic. Responded well to stimulation at these times. B. P. came down to 112/94.

Third entry, January 16.

Additional P. H. She had had tonsillitis. Eight years ago she had a "nervous breakdown" with weakness and with shooting pains in both arms.

P. E. Emaciated. Slightly cyanotic. During the examination she had a severe attack of pain lasting four minutes, during which she sat up in bed, her face distorted with pain and cyanotic, with distended veins. Moderate pyorrhea. Chest expansion somewhat limited. *Lungs* normal. *Heart.* Maximum impulse seen and felt in fifth space 10 cm. from midsternum. Supracardiac dullness normal. 5 | 8.5 . 1.5 Action regular. Loud rough systolic murmur loudest in third right interspace near sternum, transmitted to vessels of neck and rest of precordium. Early diastolic murmur along left sternal border, blowing, short and high pitched. Well marked thrill over aortic area. *Abdomen.* To left of umbilicus a swelling in the abdominal wall which felt like a lipoma. Liver edge felt rather deep in at the level of the umbilicus in mid-clavicular line, firm. No nodules or irregularities felt. *Extremities.* Very slight pitting over shins. *Knee-jerks* sluggish. *Fundi.* Vessels varied in size in different parts of their course. In the left fundus one vessel almost disappeared over a short distance as though covered by edema. Disc margins clear cut.

T. 96°-99.4°, with one rise to 101° February 16. *P.* 70-120. *R.* 15-30. *B. P.* 105/80-90/60. Amount of *urine* normal when recorded, sp. gr. 1.014-1.022, cloudy at one of four examinations, the slightest possible trace to a trace of albumin at three, 6-50 leucocytes per high power field at both. *Renal function* 5-40%. *Blood* normal January 16 except for slight increase in platelets and 2% reticulated cells. January 18. Hgb. 95%, reds 4,600,000, slight achromia, platelets normal. *Wassermann* negative. *Non-protein nitrogen* 36.3 mgm. *X-ray.* See illustration. Heart shadow distinctly enlarged both to right and left. Left ventricle large and round. Supracardiac shadow showed moderate increase in width and was prominent on the right side. Root glands large and showed evidence of calcification. Across the right chest in the region of the interlobar fissure was a dense band about a centimeter wide extending from the root to the periphery. Right



Heart shadow distinctly enlarged both to right and left. Left ventricle large and round. Supracardiac shadow shows moderate increase in width and is prominent on the right side. Root glands large and show evidence of calcification. Across the right chest in the region of the interlobar fissure is a dense band about a centimeter wide extending from the root to the periphery. Right lung field below this considerably diminished in radiance, although not dull, suggesting a loss of expansion rather than consolidation. Costophrenic angles on both sides somewhat hazy but not so dull as to suggest fluid. Apices relatively clear.

lung field below this considerably diminished in radiance, although not dull, suggesting a loss of expansion rather than consolidation. Costophrenic angles on both sides somewhat hazy but not so dull as to suggest fluid. Apices relatively clear. . . . . No definite abnormality of sinuses, although plates not entirely satisfactory.

The day after admission another examiner found a low pitched rumbling mid-diastolic murmur at the apex after exercise; the first sound replaced by a systolic murmur; an aortic diastolic murmur at the aortic area, the left sternal border and the apex; a faint diastolic thrill at the apex; A_2 absent; a loud rough systolic murmur and thrill at the aortic area; sustained pulse. He found many loud crackling inspiratory râles at the left border of the heart and in the left axilla, and noted systolic retraction of the sternum, though no definite Broadbent. Dr. White noted, "Murmurs at lower end of sternum probably transmitted aortic murmurs, although there is also a slight diastolic rumble there. . . . . . Liver large. Face very cyanotic. Cause of pulmonary râles in left axilla near heart? Bases clear behind.—Operation will probably be borne all right. I should advise full digitalization in any case, with maintenance of it thereafter."

January 25 divulsion of the posterior root of the fifth nerve, right, was done under novocain. Next day she had some dyspnea and marked general bodily soreness and stiffness. The right eye was ecchymotic, with a corneal abrasion, and on the 28th was swollen shut. There were râles at the left base. She still had some pain in the right face. She was up in a chair for a few minutes at a time, but was always rather dyspneic on slight exertion. She had an attack or two of dyspnea, cyanosis, and slight increase in heart rate lasting three hours. The morning of February 16 she had a severe attack, unrelieved by adrenalin, morphia or digifolin. The cyanosis was marked, the dyspnea variable. There was a red area over the flank and back. February 17 the general cardiac storm continued unrelieved by vagal pressure. The heart continued regular, the rate about 120. In the attacks her breathing was shallow, rapid, and slightly irregular. The pulse could not be felt at the wrist. The attacks began and ended suddenly. She was drowsy during them. February 17 she was irrational. The blood pressure was 110/70. February 22 she was discharged to the Eye and Ear Infirmary.

History of interval. During the next three weeks she had no definite attack of heart symptoms. At times she had to sit up in bed to breathe with comfort. She had taken one digitalis pill a day. March 10 she had "stomach ache" followed by vomiting of food.

Fourth entry, March 11.

No additional P. E. is recorded except some notes upon the eye condition. The corneal epithelium had broken down during the past few days.

T. 96.7°-99°. *P.* 80-102. *R.* 20-36. Amount of *urine* not recorded, sp. gr. 1.034-1.028, cloudy at both of two examinations, a slight trace to a trace of albumin and 5-50 leucocytes at both, very rare red blood cells at the second. ***Blood.*** Hgb. 85%, leucocytes 14,600-12,500, polynuclears 80%, reds and platelets normal.

The orders are for digitalis, morphia, caffein and triple bromides.

The patient had a good deal of vomiting. She showed increasing cyanosis and dyspnea, went steadily downhill, and died March 24.

DISCUSSION

BY DR. RICHARD C. CABOT

NOTES ON THE HISTORY

We find trifacial neuralgia in arteriosclerosis. Fifty-four is however rather young for an arteriosclerotic process serious enough to be a cause of death six years later.

A PHYSICIAN: If she was exposed in childhood would you pay any attention to tuberculosis as a factor in the present illness?

DR. CABOT: No. My guess is that this tuberculosis has nothing at all to do with the present illness. I believe if all family histories were omitted from all records it would make no serious difference. Of course there are certain family diseases, such as web fingers and hemophilia. But I do not think it worth while to take family histories in private practice.

The diseases of childhood probably have no connection with the present illness.

Influenza is often the beginning of many illnesses, not because of lesions then produced in the organism, but because the whole person is weakened, rendered liable to other illnesses.

Severe dyspnea, cyanosis, and stabbing precordial pain are serious symptoms. But since the patient lived six years I believe she exaggerated.

I wonder how the vomiting could be a cause of the attacks of pain in the face. I have never seen it. It seems queer.

NOTES ON THE PHYSICAL EXAMINATION

It is troublesome to localize the apex of the heart at her age. With those thick barrel chests we frequently cannot find it.

Cardiac percussion does not amount to anything in my opinion. When you check it up with the facts you often find it is wrong, sometimes two or three inches. Try it with your eyes shut. You can't do it. The usual way is to decide where the heart is, then percuss; unconsciously your percussion corresponds with your previous ideas.

Dr. Holmes: The method of making measurements from a seven-foot plate is that recommended by Groedel.* We are usually able to tell whether the patient is rotated or not by the relation of the sternal end of the clavicle to the spine. A more accurate method is to place a small lead ring over the spine and a small lead cross directly in front of it over the sternum; then if the cross appears inside the ring you are sure there is no rotation.

A line is drawn down the median line of the chest. The furthest point to the left is obtained and a line is drawn from it to form a right angle with the midline (9.8 in plate). This gives the distance to the left. The furthest point to the right is connected to the midline in the same way. This is the distance to the right (7.4 in plate). The sum of these two, 17.2, is the total transverse diameter. The highest point of the heart shadow on the right is connected by a straight line with the lowest point on the left. This gives the length of the heart, here 17.5. The diameter across the base is obtained by drawing a line at right angles to the length line to the lowest point on the right, here 6.4, and a second line to the highest point on the left, here 6.3, and taking the sum of these two. The actual figures may vary a good deal. There is some chance for error, but the method has considerable value. If you compare the distance across the base with the length of the heart it gives you an idea of the shape. In this particular case you can see that the increase is downward and to the left in this area which represents the shadow of the left ventricle. The right ventricle lies in front of the other portions of the heart and is not visible by X-ray. We get something out of the shape of the heart, and in this case we should say that the enlargement is largely due to an increase in the size of the left ventricle.

Dr. Cabot: How do you know the heart is enlarged?

Dr. Holmes: By the measurements. Fourteen centimeters is the maximum for any heart. That is taken from Groedel's table, made after examining a large number of normal hearts. He does not give anything on his table over fourteen. Another method is to compare the total internal diameter of the chest with the diameter of the heart. If we find that the diameter of the heart shadow is half or more than half the internal diameter of the chest the heart is enlarged. Here it is probably more than half. Another thing that helps you to see that the heart is enlarged is the shape of the left auricle. One thing we should like to know is whether the great vessels are increased too. If you have enlargement of the left side of the heart and marked bulge of the aorta to the right, that is suggestive of a luetic process. If you find enlargement of the left ventricle and tortuous arch with increase to the left, that suggests a sclerotic condition. If you have enlargement of the left ventricle and a general enlargement of the whole aortic shadow it is more the picture of high blood pressure.

Dr. Cabot: That last point of Dr. Holmes's is a thing I am anxious to be convinced of. I am waiting in the hope that such a case will turn up, showing a difference by X-ray between a simple arteriosclerotic arch, which never breaks and which does no harm, and a syphilitic arch without aneurism. There is a very important distinction from the point of view of prognosis. If the X-ray can make it it is very important. At this hospital and at the Peter Bent Brigham, where I make these comparisons, I have watched a great many times for that particular point and so far have not seen it verified. I have heard the X-ray men say, "That is syphilitic and not sclerotic," and not come out right. I have no doubt it can be done, but it must be difficult. I am making this mistake all the time myself, and am willing to believe the X-ray men can make mistakes. I am putting this to Dr. Holmes now so that he will be sure to catch me the next time he has one of these.

We can very rarely have a diastolic murmur and no disease. Besides the enlargement we have another piece of evidence. With a big left ventricle you expect a high blood pressure. I have no doubt that the blood pressure had been higher at some time, but had gone down.

What do you think about a few moist râles in the left axilla?

Physicians: Cardiac disease.—Passive congestion.

Dr. Cabot: At the left axilla and nowhere else? If it said at both bases I should say cardiac disease certainly, but just "left axilla" is not enough. It may be cardiac, but I should not be at all sure of it.

The kidneys are normal. I should say it is a perfectly normal urine examination. Forty per cent. is a first rate renal function.

If the hemoglobin is normal and the smear is normal you do not need to bother with further examination of the blood.

On the basis of the X-ray of the teeth would you advise operation, Dr. Holmes?

Dr. Holmes: I think that you could not go so far as that by X-ray. You can get a dull antrum without any active infection.

Dr. Cabot: That is one of the things I want to bring out, because there are men with less experience than Dr. Holmes who will tell you to cut a hole, and there are enthusiasts who are always ready to do so, especially if you tell them to. There are a great many cases coming through here with a dull antrum and no harm.

A Physician: Would you recommend removal of the bridge work?

Dr. Holmes: I think that again should be left to the dentist. I should call his attention to the fact that there is an infection there.

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*Franz M. Groedel, Roentgendiagnostik der Herz- und Gefässerkrankungen. Berlin, 1912.

Dr. Cabot: How many normal people do you think have pus pockets in their teeth?

Dr. Holmes: There is a very good percentage. A man in Chicago took five hundred people off the street and X-rayed them and found a very high percentage. But you do not find pus pockets in people who have no dentistry.

Dr. Cabot: Then the moral is, don't go to the dentist?

We have to deal with people who believe pus pockets are a cause of insanity, trichiniasis, and everything else you can name, and there are some who believe that they do not mean anything at all. I am much nearer to the last group, but should not like to be quoted as saying that. I think there are a great many harmless pus pockets in the teeth; most of us have them.

"Sharp stabbing pain." This nerve regenerates. Here in the tissue the two ends of that nerve got together somehow or other;—it is extraordinary.

This heart examination sounds much worse than it did before.

People do not have nervous breakdowns at fifty. If it is the first time it is not a nervous breakdown; it is something else. It may be mental disease, arteriosclerosis, nephritis, or heart trouble; but do not call it a nervous breakdown. Nervous breakdowns begin earlier in life.

A Physician: Dr. Cabot, just what was going on in the heart at that time?

Dr. Cabot: My guess is that she had a fibrillation, that they gave her some digitalis, and she braced up. That is only a guess.

A Physician: How about acute dilatation?

Dr. Cabot: That is a term I never use. We say a man runs a race and gets a dilated heart. Does he? No. The only evidence we have is that at the end of a long race a man's heart is smaller. Acute dilatation may exist, but I have never seen it.

The heart measurement is just about as X-ray gave it. This is by percussion.

There is passive congestion of the liver, presumably.

The blood pressure was always low here.

I do not know why they have gone into the details of this blood so much. They must have suspected something that I do not yet suspect.

A Physician: "Non-protein nitrogen 36.3 mgm." What does that mean?

Dr. Cabot: Thirty-six does not mean anything. It has to get up to sixty or seventy before you are sure you have anything, i. e., retained products such as you would expect in kidney disease. I do not think we have any evidence of it yet.

Dr. Holmes: This plate (see illustration) of course is more recent than the one the measurements of which are shown in Figure 2. The later one shows the same characteristics as the other one except that all the diameters are increased. The most marked change however is to the right, and I think that is what we should expect. The muscle is losing its tone. I do not want to say dilated, but that is the easiest term.

Dr. Cabot: "Acute" is the only thing I am opposed to.

Dr. Holmes: Then I will say chronic. So that we have here marked prominence of the curve of the left ventricle, a slight increase and a distinct prominence of the left auricle, and an increase across the base showing that the auricles are dilated. The supracardiac dullness is also slightly increased, and the aortic knob is a little prominent. In addition to the plate we have a fluoroscopic examination and study these cases in the oblique and lateral views as well as the antero-posterior view that we get on the plate. We have not attempted to get plates in those other positions. At a distance of seven feet it is very difficult to get a good plate, but under fluoroscopic examination we can get a good idea of the size.

These plates are taken during normal respiration and with the patient sitting erect. I think this is very important. If the patient leans forward you disturb the heart shadow, and if you have the patient hold his breath he will take a deep breath more often than the kind you want him to. If he does it diminishes the size of the shadow and causes a blurred condition.

Here at the root of the lung, extending outward and across the chest, you have a dense shadow with sharply defined margins and curved upper border, suggesting that it is between the lobes on that side. A pneumonic process, for instance, in the lung would not be likely to have a sharply defined margin; it would not be so narrow. That shadow may not be nearly so wide as it looks in this plate,—magnification. If I should hold up this paper in this slanting position in front of the light the shadow would be about twice the thickness of the paper. The same thing is true of the interlobar septum, which causes a much larger shadow than the actual thickness of the septum. So this shadow may be a small collection of fluid between the lobes. On this side you see considerable increase in the hilus shadow, and probably the same amount on the other side.

Dr. Cabot: How would you interpret that increase of the hilus shadow?

Dr. Holmes: I think it is probably passive congestion in this case. This region contains the large blood vessel, and with broken compensation of the heart you get passive congestion. You also have other evidence of it here, diminished radiance of both bases. So that taking the whole picture you have an enlarged heart with changes in the lungs suggesting broken compensation. This shadow extending across the chest may be a beginning inflammatory process, but we have no definite evidence.

A Physician: How would you differentiate between increased dullness at the base of the heart due to aortic disease and increase due to mediastinal disease?

Dr. Holmes: You would have to distinguish the shadow of the aorta from the shadow of the hilus of the lung or mediastinum. Usually by rotating the patient in front of the fluoroscope you can separate the shadow of the mediastinum from the aorta. Another thing is the character of the shadow. The shadow of the aorta is of fairly even density, whereas a shadow of consolidation at the root of the lung would have a lobulated margin or a rather indefinite margin, as this has, radiating out into the lung field.

A Physician: How would you tell that patch on the left hand side which you know is not the heart? How would you be sure that is merely congestion and not mediastinal disease?

Dr. Holmes: We have no way of distinguishing between enlargement of the hilus shadow and passive congestion. Some things might help, a little calcification in that region. The enlargement of the glands and hilus shadows due to disease and infection is apt to be a little more sharply defined. We would never make a diagnosis of disease of these glands in the presence of a damaged heart, because we know it does occur from the heart alone.

Dr. Cabot: Dr. Holmes does not confine himself to noting shadows; but because we obviously have heart disease here he says that the shadows are probably due to heart disease and not to anything which is not suggested by the history.

"Middiastolic at apex." The murmur often heard in mitral stenosis. That is very important.

"A_2 absent." The man who wrote this record has begun to suspect a certain disease, and he is putting down things to follow that out. He is thinking of chronic pericarditis with adhesions pulled upon by the heart so as to make retraction in the front and in the back of the chest. That is a very unsafe conclusion. You may see systolic drawing in of the chest with a perfectly normal heart, or with a big heart, without any pericarditis, so that I should advise you to disregard those retractions as evidence of pericarditis.

Here recurs that same left axillary patch we have been talking about, and it is on the wrong side for Dr. Holmes' lesion here. If the latter were on the other side we should try to connect it with the patch of râles.

What operation are they going to do? I suppose they are going to take out the Gasserian ganglion. They had an internist come in to see whether she could stand an operation, and he said that she could. He gave her a good dose of digitalis before the operation, four or five days before, presumably, and got the heart under the influence of digitalis. The heart came out all right, and the operation came out all right.

A Physician: What is the dose of digitalis?

Dr. Cabot: Presumably a grain and a half solid extract. That is the average pill that is given here.

Again I see no reason to suspect the kidneys are diseased.

Is there going to be any syphilitic aortitis in this case, Dr. Holmes?

Dr. Holmes: I do not think so.

Dr. Cabot: I do not either.

DIFFERENTIAL DIAGNOSIS

Now let us start with what we know best and work from that. Start with the aortic valve. The valve has been under suspicion from the first here because we had dilated heart and a diastolic murmur. Those two things always make one think of an aortic lesion. Then when we get to this last admission we find a systolic thrill, no aortic second sound, and a so-called "sustained pulse." That is the opposite of a Corrigan. That is important. What prevents her from having a Corrigan pulse? Aortic stenosis. In other words this is a perfectly good text-book picture of aortic stenosis. There are four cardinal signs of aortic stenosis. She has them all,—systolic murmur, systolic thrill, no aortic second sound, and a well sustained pulse. So I suspect aortic stenosis and of course regurgitation with it, a valve that will not open and will not shut, a calcified, hard, gritty mass that will not let your finger through it probably. That is enough, and that could cause all the symptoms she has or has had. She is fifty-nine. That is the age at which you see most cases of advanced aortic stenosis,—old people. I believe she had had it for a great many years. It very gradually increased along with the hypertrophy and dilatation and finally killed her.

What about the mitral? We had at one time a record of a mid-diastolic, which is ordinarily a mitral murmur; but on the other hand Dr. White examined her near the end and said that he thought all the lower murmurs were aortic and not mitral. So I think on the whole we had better say that if the mitral is affected at all, it is not much diseased.

Miss Painter: I must have left out something, for Dr. White did think there was mitral disease.

Dr. Cabot: We do not get the evidence on which he thought so. I do not feel sure of it from any facts we have got yet.

We are going to find a big heart of course, and especially a big left ventricle. Dr. Richardson will say chronic endocarditis of the aortic valve with stenosis—it should not let anything much larger than a pencil through it—and he will say hypertrophy and dilatation of the heart, chronic passive congestion of the lungs and liver—the liver was at the umbilicus—and probably some fluid in each pleural cavity, double hydrothorax, and in the peritoneum, ascites. What about this X-ray shadow in the right lung?

I do not know what he will say. I think he will say there is thickening there in the interlobar septum. No more.

A **Physician**: Would old adhesions cause that?

Dr. Cabot: Yes, chronic pleuritis. I do not believe you will find any pus or tissue other than fibrous tissue, judging from previous experience rather than from the plate. My experience is that with such shadows as this the pathologist does not come up to your expectation. He will find something, but not so much as he ought to find.

What else will he find in the body? Arteriosclerosis. In the first place this type of pain goes with arteriosclerosis. In the second place the age is the age in which almost everybody has some. The aortic knob was somewhat distorted, Dr. Holmes says, and the peripheral vessels were thickened. I think the aorta and great branches will show some arteriosclerosis. I do not think we have any evidence that the coronary arteries are diseased. She has had some pain which might have been anginal pain, but I do not think so. The kidneys ought to be all right. They will show a little arteriosclerosis. They will not show nephritis. What other organs are there to consider? The spleen—passive congestion. The liver we have already mentioned. Nothing in the gastro-intestinal tract but congestion. Did you look at the nervous system?

Dr. Richardson: No.

Dr. Cabot: We have no evidence on which to suppose there was anything wrong in the nervous system. That is all I can say.

A **Physician**: Can you explain the left axillary râles?

Dr. Cabot: I don't know what to say about them. Would you like to suggest that she has tuberculosis at that point?

A **Physician**: I don't believe so.

Dr. Cabot: I suppose that is passive congestion, but of course I do not know. Every case has some mystery about it. If you explain everything it is because you have omitted something.

A **Physician**: Can you make any explanation of the leucocytosis?

Miss Painter: The eye had been in a terrible condition.

Dr. Cabot: I think that is the best suggestion. Somehow or other that eye got infected. Another possibility would be intracardiac clots. They could give leucocytosis, and this is the sort of case that often gets intracardiac clots.

A **Physician**: The Wassermann was negative. Is it not a fact that in cases like this the trouble might be syphilitic in origin and yet the Wassermann be negative?

Dr. Cabot: I am not saying this isn't syphilitic because of the negative Wassermann. A good many experiences here in trying to do what I am trying to do this morning have shown that if you say syphilis you are almost always wrong. It is all right to say syphilis if you are not going to have a post-mortem. But I would not say syphilis in this case even if there was a positive Wassermann. It may be syphilis, but I cannot see any evidence of it and am not going to say so.

A **Physician**: There were no miscarriages or children.

Dr. Cabot: If there had been miscarriages and no children it might have been something.

A **Physician**: Isn't that rather high hemoglobin of note in this case?

Dr. Cabot: Why should it be lower?

A **Physician**: I should think in a woman in her economic condition and with such emaciation we should expect it lower.

Dr. Cabot: I have dealt with the poor in this city. I do not think poverty has anything to do with hemoglobin. I do not find anemia with starvation. It would surprise me if it were lower.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Rheumatic heart disease with aortic stenosis and regurgitation and congestive failure.
Operation, posterior root of fifth nerve section.

DR. RICHARD C. CABOT'S DIAGNOSIS

Chronic endocarditis of the aortic valve, stenosis.
Possibly slight chronic endocarditis of the mitral valve, stenosis.
Hypertrophy and dilatation of the heart.
Chronic passive congestion.
Double hydrothorax.
Ascites.
Arteriosclerosis, general, and in the aorta and great branches.
Slight arteriosclerosis of the kidneys.
Chronic pleuritis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Chronic endocarditis of the aortic valve. (Stenosis.)

2. *Secondary or terminal lesions*

Hypertrophy and dilatation of the heart.
Chronic passive congestion.
Edema of the lower extremities.
Fibrous myocarditis.
Mural thrombus of left ventricle of the heart.

3. *Historical landmarks*

Chronic pleuritis.
Obsolete tuberculosis of bronchial glands.
Slight arteriosclerosis.
Cholelithiasis.
Old infarct of left kidney.

Dr. Richardson: The body looked as though weight had been lost. We were not permitted to examine the head.

The legs, ankles and feet were swollen and pitted on pressure. The subcutaneous tissues were a little wet.

The peritoneal cavity contained a small amount of fluid, the beginning of ascites.

The mucosa of the stomach and intestines was reddened, velvety, juicy, weeping thin bloody fluid,—the typical picture of chronic passive congestion.

The diaphragm on the left was at the sixth rib, a little low. The right pleural cavity contained a small amount of thin pale fluid; none on the left. The bronchial glands were slightly enlarged, and several of them showed small areas of fibrocalcareous degeneration. The left lung was bound down by old adhesions. The right lung showed many scattered old adhesions. The lung tissue was spongy to a little leathery, showing what we call varying shades of salmon color, varying shades of brown and red intermingled. The tissue yielded a moderate amount of thin brownish-red frothy fluid,—chronic passive congestion.

Dr. Cabot: Is there nothing to say about that patch in the right lung?

Dr. Richardson: The only thing of course is the pleural adhesions.

Dr. Cabot: That is the sort of result that makes me cautious. He didn't make anything of that X-ray shadow.

A Physician: Interlobar septum?

Dr. Richardson: That shadow might be due to an adhesion between the wall of the chest and the lung, especially after Dr. Holmes' careful demonstration of the shadows and of the different angles at which he takes the picture. He might I should think pick up the edge of an adhesion and possibly get a shadow of that.

Dr. Holmes: I don't believe that you could get a picture of adhesions to look like that. You could get a thick interlobar septum which needs no more than the thickness of a knife-blade to show. I mean a thickening of the pleura between the lobes.

A Physician: Interlobar pleurisy that had healed?

Dr. Cabot: But the pathologist does not find it. That is the trouble. I warned you that he wouldn't find much.

Dr. Richardson: I should have been a little more careful and put down just where those scattered adhesions on the right side were; but they were not of course of great extent.

She was fifty-nine, with fairly developed frame and muscles. If her heart had weighed 240 to 260 grams that would have been normal. It weighed 750 grams. Of course that is very great enlargement. The myocardium generally was thick, more especially that of the left ventricle, which was 15 mm. The right ventricle wall was 4 mm., slightly thickened. The marked increase is in the left ventricle wall. The columnae carneae were well marked. There was considerable dilatation of the left ventricle, nothing very definite of the left auricle. On the right there was slight dilatation of the auricle and the ventricle. The mitral valve measured 9 cm. There were no definite lesions of this valve. The orifice of the aortic valve presented as a slit about 1½ cm. long and 1 mm. wide. The cusps were fused into a fibrocalcareous mass. The tricuspid valve measured 13 cm., negative, the pulmonary 7½ cm., negative. This is a case, then, of pure aortic stenosis. The coronaries were negative. The ascending thoracic aorta was negative. The descending thoracic and the abdominal portions showed a slight amount of fibrous sclerosis. That aorta at fifty-nine is a pretty good one. The great branches, however, showed a slight to moderate amount of fibrous sclerosis.

The liver weighed 1200 grams. The margin of the liver was well down below the costal border, 6½ cm. below. This liver was rather small, and showed typical nutmeg markings,—chronic chronic passive congestion.

The gall-bladder was slightly distended with thin bile. It contained nine stones which were facetted, 1 cm. in greatest dimension, and crushed under the thumb, showing brownish crystalline material. One of the stones obstructed the cystic duct.

The spleen weighed 150 grams. The organ generally was thick, the tissue elastic, rubbery; passive congestion.

The kidneys combined weighed 315 grams. The capsules stripped. The surfaces were dark bluish brown-red, as was the tissue. In the left kidney there was a small old infarct. I should have mentioned that in the left ventricle opposite a place in the myocardium where there were several areas and streaks of myocarditis there was a mural thrombus.

The miscroscope confirmed the presence of the fibrous myocarditis in the ventricle wall and that of the thrombus. The examination of the other tissue showed chronic passive congestion, and in the case of the kidney there was some arteriosclerosis of the renal vessels. There was no definite nephritis.

Dr. Cabot: Dr. Richardson says this is a perfectly typical aortic stenosis. There is no hole in the valve opening at all, as far as you can see. The astonishing thing to me is that she lived on.

It is very common to find gall-stones with no symptoms, no harm, no reason to pay any attention to them.

A Physician: For two years she had marked pyrosis and gas.

Dr. Cabot: A surgeon of a certain type would find that evidence of gall-stones. But you see it in hundreds of people with no trouble in the gall-bladders.

A **Physician**: Do you still think the leucocytosis came from the eye?

Dr. Cabot: I have this heart clot in case there isn't enough in the eye.

CASE 10292

A Norwegian sailor of fifty-two entered March 31 unconscious. The history was obtained from his daughter.

F. H. and P. H. not obtained.

P. I. Two days before admission he returned from a trip complaining of malaise, cough with thick sputum, and pain under the sternum. He had no fever and was up and about. Two hours before admission he was found in bed, unconscious, in about the same condition as at the time of admission. There was no history of medication except that ordered by a physician, or of alcohol.

P. E. A well nourished man, markedly cyanotic, with eyeballs rolled up and froth at the mouth. Respirations slow, with long periods of apnea between each two breaths. *Ears.* Drums slightly hazy but not red or bulging,—apparently old chronic changes. *Lungs.* Right chest slightly less resonant than left. Many large bronchial râles heard everywhere. *Heart.* Dimensions could not be determined because of râles. *Abdomen* normal. *Genitals* and *extremities.* No record except no edema. *Pupils* small but not pinpoint. No reactions. *Fundi.* Examination not satisfactory.

T. 103.7°. *P.* 127. *R.* 20. *Urine.* Amount not recorded, sp. gr. 1.024, a trace of albumin, occasional leucocytes. *Blood.* Hgb. not recorded. Leucocytes 20,000. *Lumbar puncture* in the fourth lumbar interspace. Clear fluid. No clot. Initial pressure 280, after withdrawal of 10 c.c. 260, after withdrawal of 15 c.c. more 160. 1 cell. Jugular compression 100. Rapid rise. Total protein 78 mgm. Wassermann negative. Gold solution 0000000000.

The patient died the night of admission.

Discussion

BY DR. MAURICE FREMONT-SMITH

NOTES ON THE HISTORY

This man came back complaining of malaise and cough. I think we should remember that typhoid fever very frequently starts with a bronchitis, and there may even develop a pneumonia which quite obscures the picture of typhoid. It states here that he had no fever, but perhaps his temperature was not taken.

Of course when a man of fifty-two is found unconscious in bed the likelihood is that he had a cerebral hemorrhage. We should like to know about his past history,—whether he had had any situation that might develop into an intracranial emergency such as a middle ear. It is quite possible with a chronic discharging ear that this might be the first symptom of an abscess.

There is a form of malarial fever, always estivo-autumnal, that comes on with sudden cerebral symptoms and coma, usually not out of a clear sky. The patient has generally had typical attacks of malaria before. But this is to be thought of in a man coming from across the seas.

NOTES ON THE PHYSICAL EXAMINATION

From his respirations we should suspect either a marked rise in intracranial pressure or possibly morphine.

DIFFERENTIAL DIAGNOSIS

We have to consider cerebral hemorrhage, which I think is the most likely. Before the lumbar puncture was done of course a meningitis, either luetic or meningococcus, had to be considered. The spinal fluid pressure is definitely high. I should like to know what his blood pressure was.

Miss Painter: It is not recorded.

Dr. Fremont-Smith: The total protein is about double the normal in an otherwise negative fluid. That is said to be found sometimes in cases with hypertension. The total protein is high in cases of cord tumor. But here we have evidence that there is no block. He certainly has not a meningitis. The temperature of 103° and leucocytosis of 20,000 are both high for an intracranial hemorrhage, but we must accept that.

A **Physician**: Would the cough and sputum be suggestive of some respiratory infection?

Dr. Fremont-Smith: I think we shall have to postulate a beginning bronchopneumonia, which will help us to explain the temperature and white count.

A **Physician**: He probably had a pretty general edema of the lungs at the time of examination.

Dr. Fremont-Smith: I should think so. Perhaps the deep unconsciousness would account for that.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Lobar pneumonia.
Pulmonary edema.
Septicemia, unknown origin.

DR. MAURICE'S FREMONT-SMITH'S DIAGNOSIS

Bronchopneumonia.
Cerebral hemorrhage.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Purulent bronchitis.
Bronchopneumonia.

2. *Secondary or terminal lesions*

Edema of lungs.
Soft hyperplastic spleen.

3. *Historical landmarks*

Obsolete tuberculosis of the apices of the lungs.
Chronic pleuritis.

Dr. Richardson: We were not permitted to examine the head in this case, so we cannot settle the question of hemorrhage or of middle ears.

The pleural cavities were obliterated by old adhesions. The trachea and bronchi generally showed a dirty dark reddish mucosa coated with mucopurulent material—purulent bronchitis. At the apex of each lung there was a small fibrous, pigmented mass, calcareous in places,—obsolete tuberculosis. The lung tissue generally showed scattered through it smaller and larger areas of bronchopneumonia, and the cut ends of the bronchi in these situations yielded much pus.

The heart weighed 375 grams, slight hypertrophy and dilatation for him, but with good valves.

The spleen was a little enlarged, weighed 258 grams and was soft. The kidneys weighed 408 grams combined. That is a little large, but macroscopically and microscopically they showed no definite lesions.

Dr. Fremont-Smith: It is interesting to hear of slow respiration with a definite bronchopneumonia. It seems as though we should have to have something in his head to explain that.

CASE 10293

A ten-year-old schoolboy of Russian-Jewish parentage entered March 12.

F. H. and P. H. Not obtained.

P. I. Five days ago when in good health he began to feel unwell and to lose appetite. His mother thought he was feverish. The following day his left leg began to swell, became red from above the ankle to about six inches above the knee, and was tender. He grew steadily worse.

P. E. A poorly developed, wasted, cachectic boy, looking ill. Tongue dry and coated. *Lungs* and *abdomen* normal. *Heart, B. P., genitals, pupils* and *reflexes* not recorded. *Extremities.* The left leg was swollen and red from four inches above the ankle to six inches above the knee. It was especially tender over the tibial tubercle.

Before operation *T.* 104.2°, *P.* 130, *R.* 30, *urine* and *blood* not recorded. *Blood culture* showed staphylococcus aureus.

The patient was received in the Emergency Ward just after midnight. He was profoundly toxic and semicomatose, with general pyemia, on admission. Operation was done at once. He continued in the same condition until his death, March 13.

Discussion

BY DR. EDWARD L. YOUNG, JR.

This is a story such as we often find in an acute infection which quickly localizes as an osteomyelitis, or as a rapidly localizing process in the muscle tissue. If it were an ordinary acute osteomyelitis we would expect more pain and tenderness, so I should assume from the story that we are dealing with a staphylococcus septicemia which is localizing in the soft tissues of the leg. The tenderness over the tibial tubercle may mean that the infection is in the bone.

When a case goes as rapidly as this the prognosis is extremely bad. Especially is this so where the blood shows an active growth of staphylococcus aureus, as it did here. Streptococcus hemolyticus can be recovered from the blood stream in sepsis and not necessarily be followed by fatal outcome. But with staphylococcus, as I have said, the prognosis is bad. Here the infection was probably overwhelming and the chance of being able to head it off is very slight. It is the very type of case in which we need some chemical that will inhibit or destroy the growth of the bacteria in the blood without poisoning the patient himself. After the first report on mercurochrome there was the hope that such an agent had perhaps been found, but the use of it in a great many cases in the last few months seems to show that it has little if any effect on staphylococcus and streptococcus septicemias.

In this case it seems as though we were going to gain little if anything by operation, but it is the only thing to do. The incisions into the infected area, whether bone or only soft tissue, may possibly give drainage enough to benefit the patient.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Staphylococcus septicemia, localizing in the lower leg.

PRE-OPERATIVE DIAGNOSIS

Acute osteomyelitis of the tibia.

OPERATION

Light ether anesthesia. Following an intravenous injection of 13 c.c. of 1% mercurochrome a tourniquet was applied to the left thigh and an incision was made over the upper end of the left tibia in the subcutaneous region of this bone. The periosteum was elevated and was tense with pus. It was invised, with evacuation of considerable free pus under great pressure. Four drill holes were made in the anterior surface of the tibia, pus welling up from the two central ones. The periosteal elevator was passed between the periosteum and the bone laterally and counter incision made over this. Two Dakin tubes were placed in the primary incision and one in the counter incision and fastened in place by means of silk worm gut sutures.

BACTERIOLOGICAL REPORT

Culture from osteomyelitis showed staphylococcus aureus.

FURTHER DISCUSSION

The operation shows an acute osteomyelitis which has been so overwhelming that it has not caused the pain that usually comes with it. Efficient drainage was given, but in spite of this the patient goes as we have said.

I should think, in view of the nature of the organism, that we are to expect abscess formation in other organs such as the liver, kidneys and lungs, as the staphylococcus localizes in these areas, while the streptococcus likes the serous surfaces.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Acute osteomyelitis of the left tibia.
Incision and drainage of osteomyelitis.
Septicemia.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Septicemia, staphylococcus aureus.
Acute osteomyelitis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*
   Septicemia, staphylococcus aureus.
   Osteomyelitis of the left tibia.
2. *Secondary or terminal lesions*
   Focal pneumonia of both lungs with abscess formation.
   Pericarditis, acute.
   Abscesses of left ventricle wall of the heart.
   Abscesses of kidneys.
3. *Historical landmarks*
   Operation wound, left leg.

Dr. Richardson: The pericardium showed acute pericarditis. The heart showed areas of suppuration in the wall of the left ventricle.

The kidneys showed a few small abscesses.

A case then of osteomyelitis of the tibia with general staphylococcus infection, associated with focal pneumonia and abscesses of the lungs, myocardium and kidneys.

CURRENT LITERATURE

ABSTRACTORS

Gerardo M. Balboni
William B. Breed
Laurence D. Chapin
Austin W. Cheever
Randall Clifford
Ernest M. Daland
Horace Gray
Robert M. Green
John B. Hawes, 2d
John S. Hodgson
Fred S. Hopkins
Chester M. Jones
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Francis W. Palfrey
Edward H. Risley
George C. Shattuck
William H. Shedden
Warren R. Sisson
John B. Swift, Jr.
George G. Smith
W. T. Sherman Thorndike
Wilder Tileston
Henry R. Viets

Carbon Tetrachloride in the Treatment of Uncinariasis

Cadbury, William W. (*American Journal of Tropical Medicine*, January, 1924, Vol. IV, No. 1). The relative efficacy of carbon tetrachloride and of oil of chenopodium was tested on 72 cases of uncinariasis in students at the Canton Christian College in China. Fifty-seven of these cases were cured after one or more treatments and 15 were not cured. Many cases required two, a few three, and one case four treatments. The dosage of oil of chenopodium was 3 cc. in three doses at intervals of one hour and that of carbon tetrachloride varied from 3 to 6 cc. The conclusion was that, in this group of cases, the oil of chenopodium proved decidedly more efficacious than the carbon tetrachloride. Various possible explanations are offered by the writer for the fact that his results were less good than have been reported previously by other observers, but he does not state whether he was dealing with Necator, with Ankylostoma, or with both kinds of parasites.

The reviewer has treated for hookworm a considerable number of Chinese patients from the vicinity of Canton and has subsequently examined the stools repeatedly by effective methods for concentrating the ova. He is inclined to think that the efficacy of both oil of chenopodium and of carbon tetrachloride for complete eradication of hookworms has been overrated in the past.

[G. C. S.]

Radio-Ulnar Synostosis

Davenport, C. B., et als. (*Archives of Surgery*, May, 1924). These authors present a 62-page article on this rather rarely written about subject. They especially emphasize the hereditary nature of the disease and its certain occurrence according to the Mendelian theory. They summarize their observations ~~as follows:~~

1. Radio-ulnar synostosis varies greatly in degree. Two fairly distinct types may be distinguished: (a) the type in which the radius head is absent, the proximal end of the radius being fused with the ulna, and (b) the type in which the head of the radius is displaced toward the flexor side of the arm. The extent of the bony union varies from about 2 to 6 cm.

2. A comparative review of the mammalia shows that the radius and ulna are frequently united. This union is associated partly with their close proximity, so that any overgrowth of either bone may cause a permanent fusion of the two. When the use of the anterior appendage is not seriously interfered with this union may become normal for a species, genus or family.

3. The radius and ulna develop out of the same precartilage plate, and, at a later stage, the perichondrium of the two bones is continuous at their proximal ends.

4. The abnormal developmental impulses which lead to synostosis are indicated by other bony defects in the propositus or his family. Among the commonest of these are: exostoses, clubfoot and clubhand, flatfoot, abnormally diminished growth of long bones, short stature and bowlegs; in general, dyschondroplasia.

5. There are genotypical differences in the various families, which thus belong to diverse biotypes. In one family, only one gene appears to be responsible for the synostosis, and this acts much as though in the Y chromosome (but this is highly uncertain). In most families, distribution is that of a two-gene trait; in one of the families, of a three-gene trait. The synostosis is always a dominant trait.

6. Males are twice as likely to be affected as females; and this result holds for bone defects in general.

7. Frequent lack of symmetry in the defect suggests that there is frequent imperfection of dominance.

8. Consanguineous matings are found in the synostotic families; and it is probable that they are especially frequent in them.

9. Radio-ulnar synostosis appears to be a dominant partially sex-limited trait, which varies in degree of expression.

[E. H. R.]

Septic Thrombophlebitis of the Femoral Vein

Poole, E. H., and McGowan, F. J. Jr. (*Archives of Surgery*, May, 1924). Poole and McGowan report their observations based on one case in which the operative removal of the thrombus was successfully undertaken. Operation is best done under local anesthesia. It is necessary, of course, to ligate the central venous trunk, and one should operate in uninvolved tissues. Hence, in thrombus of the femoral vein the external iliac vein should be exposed. Until the thrombosed vein has been occluded by ligature it is wise to interpose some block above the vein on the cardiac side to minimize the chances of setting the thrombus free. This generally can be done by digital pressure alone. The question of immediate collateral circulation, the authors believe, is not one in point, because, if a vein is thrombosed, either collateral circulation has already been established or immediate ligation of the vein will not affect future circulation.

[E. H. R.]

Pneumarthrosis as a Diagnostic Aid

Kleinberg, S. (*Archives of Surgery*, May, 1924). Kleinberg reports a case of loose internal semilunar cartilage demonstrated by the method of inflating the joint with air and taking an X-ray. He emphasizes the usefulness and the harmlessness of this procedure if carefully done. He claims it is very helpful in many obscure conditions, and is not being employed as often as it should be mainly because it is not generally appreciated that the inflation of a joint with oxygen is both simple and free from danger.

[E. H. R.]

The Effect of Magnesium Sulphate, Simultaneously Administered, on the Efficacy and Safety of Carbon Tetrachlorid for the Removal of Hookworms

Hall, Maurice C., and Shillinger, Jacob E. (*American Journal of Tropical Medicine*, January, 1924, Vol. IV, No. 1). It having been shown that magnesium sulphate taken internally tends to diminish the absorption of other drugs coincidently present in the alimentary tract, and it being known that untoward effects attributable to the partial absorption of carbon tetrachlorid have occurred, the writers undertook a few experiments on dogs infected with hookworms (Ancylostoma caninum) with the object of ascertaining whether carbon tetrachlorid administered together with magnesium sulphate would be efficacious against hookworm in dogs. Their results indicate that the efficacy of the carbon tetrachlorid was not impaired by the magnesium sulphate.

If the same prove true of hookworm infection in man it may become possible to use carbon tetrachlorid without incurring the dangers which have led heretofore to some unfortunate results.

[G. C. S.]

Gastric Ulcer Studies

Dragstedt, L. R., and Vaughn, A. M. (*Archives of Surgery*, May, 1924). These authors carry on extensive experiments regarding the resistance of various tissues to gastric digestion, and they find that, if a section of the small intestine is isolated, but retains its blood supply, it can be inserted into a window in the stomach and left there for a considerable period of time without giving evidence of being digested by the gastric juice. They also find that a kidney, if its blood supply is intact, can remain for many months in such a gastric window without any alteration in its tissues. They describe their experiments on the production of chronic gastric ulcers in dogs and experiments to demonstrate the cause of hypersecretion of gastric juice in experimental gastric ulcer.

[E. H. R.]

Treatment of Pyelonephritis with Indwelling Ureteral Catheters

Bumpus, Hermon C., Jr. (*Journal of Urology*, May, 1924). The author stresses the removal of foci, as all abscessed and pulpless teeth and tonsils, where there is a definite diagnosis of pyelonephritis. Changes in the pelvis and calices, and the diminution in the peristalsis produce a delayed faulty drainage of the kidney with a tendency to retention of the inflammatory exudate and infected urine. Rational treatment should attempt to overcome this defect and is accomplished by the insertion of two ureteral catheters up the ureter to the pelvis, one lower in the pelvis than the other. To the upper is attached a reservoir containing a lavage solution which runs into the pelvis and escapes through the lower catheter.

The author uses 1: 10,000 acriflavin or 1 per cent. acid fuchsin, but he states that at this time it seems probable that the improved drainage resulting from the continuous lavage is of equal importance with the kind of lavage solution used. Fluids by mouth are given to insure urine output of between 2500 and 3000 cc. daily.

[B. D. W.]

Multiple Myelomas of Children

Berkheiser, E. J. (*Archives of Surgery*, May, 1924). This author presents a very thorough and well-illustrated study of this condition and makes the following comment in conclusion:

"Multiple myelomas occur in children as well as in adults. In backache and bone pains of obscure origin, multiple myeloma should be suspected.

"Absence of Bence-Jones protein does not eliminate myeloma from the diagnosis, and its presence is not pathognomonic.

"The characteristic proteinuria is found with greater frequency in the reports of patients of greater age.

"The lesions in children are larger than those in adults, while in the latter the lesions are more generally distributed.

"Skull lesions may perforate the outer table; if the inner table is eroded there may be an increase of intracranial pressure simulating tumor of the brain; if the portion over the motor cortex is involved there may be mechanical irritation with simulation of tuberculous meningitis as in the foregoing cases.

"Roentgenograms should be taken of all skulls in cases simulating tuberculous meningitis when the organisms are not found in the cerebrospinal fluid.

"Bilateral exopthalmos is present in cases involving the skull. Patients with multiple bone tumors, especially with vertebral lesions, can be made very comfortable if placed in a posterior molded plaster shell."

[E. H. R.]

Report of a Case of Cyst of the Left Ureteral Orifice

Romaine, Frank W. (*Journal of Urology*, May, 1924). The author reports a case of cyst at the meatus of the left ureter, the size of a small English walnut. At no time could the left ureter opening be noted on repeated examinations. Symptoms were: Acute pain in left lower quadrant radiating upward toward the left kidney, lasting over a period of from two to three days, then might be free from symptoms six weeks to two months, when a recurrence of symptoms would occur. Previous to the author's examination the diagnosis had been pyelitis; thus is shown the value of careful examination. Suprapubic operation with removal of the cyst effected a cure. A year has elapsed since the operation.

[B. D. W.]

Keloid of the Penis

Smith, E. O. (*Journal of Urology*, May, 1924). From the literature this is the only case of keloid of the penis on record. A colored man playing football with genitalia supported over pubes was stepped on. There was some pain and after the game some swelling of the parts, which rapidly increased. After two to three days it was decided to incise the swollen part; foul smelling pus was released, and later there was another incision and more pus obtained. At no time had there been difficulty in urinating, nor was there blood in the urine. Patient came to the hospital five weeks later with an enormously enlarged penis; the mass was very firm and dense, irregular; the glans penis was entirely concealed. Amputation was advised and accepted with uneventful recovery.

The mass from top to bottom measured 10 cm.; from side to side, 12 cm.; from front to back, 14 cm ; circumference, 35 cm. Microscopically: connective tissue, some hyaline degeneration, with irregularly distributed clumps of lymphocytes and some larger mononuclear wandering cells.

[B. D. W.]

Reinfection in Syphilis

Reasoner, M. A. (*A. J. Syph.*, Vol. 8, No. 2, April, 1924) reports four cases of reinfection in syphilis.

[A. W. C.]

Pooled Arsphenaminized Fortified Serum in the Treatment of Syphilis

Marthen, J. G. (*A. J. Syph.*, Vol. 8, No. 2, April, 1924) concludes as follows: Intensive intravenous and intraspinal treatments should be given in paresis. More improvement in the symptoms has been obtained by starting the intraspinal treatment early. Intravenous treatment only over a long period is a loss of valuable time. The pooled salvarsanized fortified serum gives better results and is not irritating when given intraspinally. The complications occurring at times during or after treatment, as jaundice and the arsphenamine dermatitis, will respond readily to sodium thiosulphate. The cause of the apparent increase of paresis is still to be determined.

[A. W. C.]

Quantitative Studies in Syphilis from a Clinical and Biological Point of View

Fordyce, J. A., Rosen, I., and Myers, C. N. (*A. J. Syph.*, Vol. 8, No. 2, April, 1924) report very technically further studies (XI, XII, and XIII of this series) on the Partition of Arsenic in Serum and Clot after Intravenous Administration of Salvarsan, Neosalvarsan and Silver Salvarsan; on the Arsenic Content of the Blood after Intravenous Injection of Tryparsamide; and on the Arsenic Content of the Cerebrospinal Fluid after Intravenous Injection of Hypertonic Saline Solution and Neosalvarsan.

[A. W. C.]

Dependent Drainage of the Perivesical Region

Chute, Arthur L. (*Journal of Urology*, April, 1924). Dependent drainage of the perivesical region is especially indicated in suppurations that involve the loose perivesical tissue; the most typical of these conditions is suppurative pericystitis. This type of drainage may, however, be used to advantage in various operations that involve the probable infection of the perivesical tissues deep in the pelvis near the base of the bladder. Dependent drainage carried out in this manner is much more efficient than any type of uphill drainage that we can devise. This drainage is easily carried out; the tissues involved are not important; the time consumed is very short. Illustrations and description in detail of the procedure, with report of two cases, are given.

[B. D. W.]

Septic Otitic Thrombosis of the Cranial Blood Sinuses and Jugular Bulb

Fraser, J. S. (*Edinburgh Medical Journal*, April, 1924), in a most excellently illustrated paper discusses septic otitic thrombosis. He says that the general aspect of a case of sinus thrombosis differs from that observed in brain abscess or meningitis. In sinus thrombosis the patient has, as a rule, flushing of the cheeks, but is mentally bright, and when questioned usually says that he feels well. A case of brain abscess, on the other hand, is pale and drowsy, while a patient with early purulent meningitis is restless and frightened. Delay in sending in cases of middle-ear suppuration suffering from earache, chilly feelings and rigors associated with evening temperature is greatly to be regretted.

[R. C.]

Endemic Goitre

Keith, W. D. (*Canad. M. A. J.*, Vol. 14, No. 4, April, 1924) finds that British Columbia lends itself to a marked incidence of goitre in man and animals; animals and human beings are very sensitive to goitre in Pemberton meadows and that they did not bring the condition in with them but acquired it shortly after coming to the valley. In this valley the farther up the stream the more pronounced is the disease. The only portion of the valley where poor sanitation exists, and where one would think that a contagion might prevail, is in the Indian village, and here no goitre is to be found either in the pigs or the human beings. These facts, together with the fact that the incidence of goitre in the valley has entirely disappeared through the use of iodine, makes one conclude that endemic goitre as we find it in British Columbia is an iodine-deficiency disease.

[A. W. C.]

THE BOSTON
Medical and Surgical Journal
Established in 1828

Published by The Massachusetts Medical Society under the jurisdiction of the following-named committee:

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Subscription Terms: *$6.00 per year in advance, postage paid for the United States, $7.56 per year for all foreign countries belonging to the Postal Union.*

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the printer with galley proof of paper.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The Boston Medical and Surgical Journal, 126 Massachusetts Ave., Boston, Mass.

ANOTHER ATTACK ON "THE MEDICAL TRUST"

A two leaf publication under the heading *"Progress"* edited by J. Aaron Lazar, with offices in Philadelphia, has been distributed in this section.

In order to catch the eye, on the first page appears a figure of a male with a head of the pronounced criminal type, naked except for a small fur covering about the loins, on which the words "Medical Trust" appear, stands with a battle axe raised apparently about to deliver a blow on the head of a maiden whose throat is grasped by the left hand of the thug. The helpless maiden is designated by the term "Free Education."

The reading matter sets forth that *A Tragedy* is being enacted in Boston and that the study and practice of medicine in the *United States* is being controlled by a *Medical Trust.* The trust being the American Medical Association. The disconsolate maiden is according to *"Progress"* the Middlesex College of Medicine and Surgery in East Cambridge.

It is alleged that if Middlesex College had an endowment equal to our large universities it would be approved, but after graduating "thousands" of men it is too small and death sentence has been pronounced upon it.

Further incorrect statements affirm that the founder of the Massachusetts State Board of Registration in Medicine, and for many years its Chairman, was a graduate of Middlesex. This undoubtedly refers to Dr. Miles who had very little, if anything, to do with the creation of the State Board by the legislature. The moving spirits engaged in presenting the arguments before the legislature were in the persons of Dr. Edwin Harvey, Dr. George Gay, Dr. David Cheever and Dr. Reginald Fitz. Dr. Miles never had any connection with the Middlesex College as such, except so far as it bought the charter of the Worcester Medical Institution, with which Dr. Miles had been connected but which did not function for over fifty years and existed in name with no activity other than the election of officers of the Corporation in order to keep the charter in force.

The Middlesex College bought this charter in December, 1914, or about that time, and it is taxing the credulity of any intelligent person in asserting that its graduates in these ten years could have reached the number of thousands. It should be kept in mind that the regular matriculants would have had to be in the college four years before graduation and it is common knowledge that no very large number of students would have entered on advanced standing even though the doors were open to the rejected or dissatisfied students of other medical schools. Most properly educated young persons would have been as little likely to apply for admission as they would have been inclined to go to any other discredited institution. Most ambitious and mentally well endowed young people ask advice about the standing of medical schools before seeking admission.

We have a suspicion, which we believe to be well founded, that action more effective than any decree of the American Medical Association, the Council on Medical Education, or the Association of Medical Colleges, is about to be taken which will be more disturbing than a classification, however just, by a body which is without compelling authority.

The State of Connecticut has performed a great public service in investigating the standing of doubtful medical schools and is still working on testimony submitted relative to the Middlesex College.

The Massachusetts Attorney General's office is also conducting an investigation of this same institution.

We are not informed as to the relation of *"Progress"* to the Middlesex College, but one can hardly imagine that such enthusiastic espousal of the Middlesex College is prompted by pure and unrewarded affection.

BUSINESS MEN AND MEDICINE

Business men who are interested in the conduct of business in conformity with ethical principles have founded organizations in order to discuss problems common to different departments of commercial life.

One organization under the name of *The Rotary Club* seeks to enroll representatives of the more important mercantile establishments in a given community and branches of this body are to be found in most municipalities. In addition to questions affecting the immediate interests of its members Rotary Clubs seem desirous of obtaining information relating to general civic questions, hence professional men are often asked to address these meetings.

The Somerville Rotary Club secured Dr. Charles E. Mongan as speaker for the meeting held July first. Dr. Mongan took occasion to inform his audience of the principles actuating the medical profession in its attempts to secure legislation which would protect the people from unreliable doctors. After interpreting the features of the law governing the registration of physicians, he carefully explained the underlying principles in this act which are to protect the people from the dangers incident to incompetent medical practice.

It was made clear that there is no intent, actual or implied, in the statutes to create a medical oligarchy, but rather a fair and reasonable standard with which all who practice the healing art must comply.

Taking the present attempt to secure the enactment of a bill which would give to chiropractors special privileges as an illustration, he showed the dangers of such legislation and made it clear that the medical profession does not hold itself responsible for or against the application of any therapeutic measure, but that it does contend that before the right to practice is conferred all physicians should demonstrate adequate knowledge of the underlying sciences on which medicine is founded and sufficient training to make it reasonably sure that the practitioner may correctly diagnose the disease of the patient. The irrational and unjust class legislation that would give to one group the right to practice after a short and incomplete study of certain symptoms as contrasted with the premedical study and scientific instruction of the regular medical student was forcibly presented.

The members of the Club showed definite interest in the facts and arguments presented and it was evident that even this very intelligent body of men was not previously well informed as to the importance of the questions now before the public.

This evidence of interest is encouraging.

Another Rotary Club has applied to the Editor of the JOURNAL for a speaker who may be willing to talk on the relation of medicine to the public needs. Ignorance of the real attitude of the profession has often created prejudice. When the people have understanding they will fight their own battles. Our function is to present the truths.

The legal aphorism "caveat emptor" should be applied in the selection of a physician as well as in the trading places.

THE BREAK OF DAWN

EVIDENCE accumulates that morning, to use loosely the words of Omar, the tentmaker, is at last casting into the bowl of night its star-dispelling stone. Harry T. Brundidge, the reporter on the *St. Louis Star* who became with such ease a Doctor of Medicine, is entitled to the credit for having provided most of the projectile power. That his message was heeded we may realize, not only from the interest taken at the time by the press of the country, but more recently by glancing over the article on "Fake Doctors" by Frederic F. Van de Water in a current issue of *The Ladies' Home Journal.*

The details of the diploma mill scandal need not be enlarged upon or repeated in these pages. We have all read them and we are all familiar with them. Nevertheless it is gratifying to know that Mr. Van de Water has acquainted himself with the facts, has investigated still further, and has presented his data to a large proportion of the reading and thinking public. *The Ladies' Home Journal* has for years been a distinctly progressive factor in many lines of reform; THE BOSTON MEDICAL AND SURGICAL JOURNAL congratulates it on having taken up a subject so near to the pride of reputable medicine. We earnestly hope that *The Ladies' Home Journal* will deal with the subject exhaustively and that other widely read journals of the country, reaching all classes of society, will also let their voices be heard in the interest of this necessary reform. The medical journals, interested as they are, reach only, to any extent, the reputable physicians of the country—the plaintiffs in the suit; the jury of the public must be reached, for in the last analysis the public delivers the verdict as to what it will have and what it will reject.

Americans, as a rule, inventive and brilliant as we often are, are nevertheless hasty, not over-conservative, and too little given to analysis and sober judgment. We are a new nation of vast and rapid development in which changes have occurred so quickly that we have given ourselves little time properly to measure the worth of that which has gone before. Such a nation, swayed largely by emotion, impulse and novelty, is very liable to be preyed upon by various forms of parasitic growth which it is too busy and too preoccupied to pay much attention to.

The nation, however, is distinctly the arbiter of its destiny. What it believes it wants it will most certainly have and the mission of its small group of untiring reformers is to see that it is given the truth concerning every situation that may arise. The reiterated teachings of a reputable press will be believed, although slowly, and such a function *The Ladies' Home Journal* is performing. Here in Massachusetts, with our relatively low medical standards, our misguided or apathetic legislature and the reactionary propaganda that is being constantly put forth by those whose interest it is to keep our standards low, any efforts made by *The Ladies' Home Journal* or the other journals of the country will be welcomed and appreciated. Eventually we will weather the storms, as always. The ship of autocracy has been likened to a staunch vessel that sails ably until it strikes the rocks and goes to pieces, in contrast to the ship of democracy, which, though leaky, poorly sailed, and with decks awash, nevertheless always reaches its port.

CORRESPONDENCE

LONDON LETTER

(From Our Own Correspondent)

May 24, 1924.

ANNUAL CONFERENCE OF THE INCORPORATED ASSOCIATION OF HOSPITAL OFFICERS

The first annual conference of the Incorporated Association of Hospital Officers, of which the President is H. L. Eason, C.B., C.M.G., M.D., M.S., Superintendent of Guy's Hospital, opened on May 22 last. Lord Dawson of Penn presided at the morning session, which was devoted to the consideration of voluntary hospitals and paying patients. Lord Dawson said it was impossible to exaggerate the value of the conference, for there never was greater need for the hammering out of a policy of constructive health. It was only by the coördination of the collective experience of the lay officers of the hospitals with that of the doctors that there was a chance of such a policy materializing. They could help to solve the problem of the voluntary hospitals and those which were teaching hospitals. If they did that they could set the example to all other institutions. The great rôle of the voluntary hospital was to set the pace. Municipal effort was outgrowing voluntary effort and would continue to do so. The whole trend of modern life was towards the increase in institutional treatment of illness, and, with the growth of knowledge, the methods of diagnosis and treatment were becoming more complex. The level of income at which a man could afford to pay for institutional treatment was getting higher, and the hospitals would be bound on economic grounds to provide for an increasing number of classes of the community.

Mr. H. J. Waring, Vice-Chancellor of London University and senior surgeon to St. Bartholomew's Hospital, said that formerly the voluntary hospitals cared only for the necessitous poor, but now there was a demand from the middle and upper classes for treatment in institutions properly equipped for medical and surgical purposes. For that there were three main reasons, the improved knowledge of the community with regard to medical things, the tendency for people to live in small houses and flats, and the conditions of service in the modern house by the personnel of the house which made it difficult to secure the proper carrying out of treatment. Whatever changes were made in the modern voluntary hospital to meet the changed requirements, there must be no difference in the high standard of treatment. There might be differences in accommodation, refinement of maintenance and attendance, but the standard of treatment must be the same for all. Hospital patients might be divided into three classes, the necessitous poor, for whom accommodation, maintenance, service and treatment must be free; the "necessitous in a way," who often were not poor, for whom accommodation, maintenance and service should be provided, for which they paid an amount the maximum of which was the cost of those services; and those who paid for accommodation, maintenance, nursing and treatment. For paying patients they should not take accommodation provided for the necessitous poor, and he thought the accommodation should be in a separate building, preferably side by side with the parent hospital. There should be accommodation in the voluntary hospitals not merely for the necessitous poor but also for maternity cases. They could not expect women to bring children into the world to become A1 men under C3 conditions. It was not fair to the mothers, the nurses, or the doctors. It was a reflection on our methods of government that a short time ago, in one of the chief cities of Wales, he had visited a maternity home adapted out of old houses, while later he had visited a hospital for the insane, a lavish building, lavishly equipped, with a lavish personnel, a building sufficiently large for the whole of the maternity cases of Wales. For the potentially fit nothing was done; for the unfit, lavish provision was made. The panel system provided for the medical and surgical treatment of minor things, but when anything serious requiring detailed investigation, skilled nursing, or skilled surgical work occurred the doctors sent their patients to the voluntary hospitals. The state did not recognize serious things; it recognized only small things.

Mr. H. W. Burleigh, Secretary-Superintendent of the Hospital for Epilepsy and Paralysis, Maida Vale, insisted that the voluntary character of hospitals must be maintained.

Mr. H. L. Eason said that the paying patients' ward at Guy's Hospital brought in £1369 last year. Patients paid for accommodation and maintenance and made their own arrangements with the doctors.

Lord Dawson suggested that some system of insurance might be possible, not necessarily state insurance, by which a man could make provision for hospital treatment if he required it. All the members of the community would have to contribute to it, for a scheme of that kind confined to second class lives would be of no value.

The conference was continued on May 23 last. Lord Burnham, the proprietor of the Daily Telegraph, presided. Mr. C. A. Mason, Secretary, Midland Eye Hospital, Birmingham, read a paper on "The Changing Character of the Voluntary System," in which he said that during the past fifty years there had occurred a complete change in the sources from which the voluntary hospitals were maintained, and that less than one-half of their income could now be said to represent charitable contributions in the strict meaning of the term. Even though the recommendation in the Cave Report for a Government grant of £1,000,000 was designed to meet a temporary period of embarrassment, it was difficult to believe that the voluntary system as it now existed would ever again be sufficient. In one of the largest provincial cities eight of the voluntary hospitals were either contemplating large extensions or were already engaged on extensions or structural improvements of a costly nature. This work could not fail to be a tremendous strain on the charitable resources of the neighbourhood. While looking ahead to the inevitable increased annual charges which would arise and remembering the straits to which hospital finances generally had been put during the past few years, one had to be unwarrantably optimistic to believe that further demands would not be made on public funds in the future. The Government grant of £500,000 did not imply any measure of public control, notwithstanding the principle which had always been recognized in relation to the disbursement of public funds. The best bulwark against any form of public control would be the reliance the general public had learned to place in the economic, prudent and progressive management of the voluntary hospitals. Public authorities had learned to place great reliance on the system of management by voluntary committees. Whatever might be the future of the voluntary system there could be little doubt that the present system of management was one of the features least likely to be interfered with. Among other agencies which had exercised a considerable influence on the character of the voluntary hospitals the British Hospital Association should be mentioned. In dealing with the changes which had come over the voluntary hospitals, none was more striking than the type of patient. Patients were never so appreciative for what was done for them as they were at present.

Mr. Fred Smith, Highbury Hospital, Birmingham, opened the discussion and said he thought there should be a policy in the voluntary hospitals to coördinate and coöperate with the other hospitals so as to utilize all available beds. He did not think that one man should suffer for the sake of a waiting bed.

Mr. H. L. Eason said he hoped that no hospitals or group of hospitals would ever apply directly to the state for grants. State grants would destroy the spirit of voluntary hospitals. A Government grant meant Government control, and it meant responsibility to the body which made the grant in the way of filling up prescribed forms and submitting to inspection; but he did not object to contributions in the form of payment for services rendered.

Lord Burnham, the chairman, commenting on the discussion, said it seemed to him that they could not do better than petition the Council of the King's Fund to set up a bureau of information. In London, where hospital maintenance was so different from what it was elsewhere, the hospitals existed for the good not only of the metropolis but of the whole Empire, and there was a stronger case for assistance or subsidy than existed elsewhere. It would be opposed to the public weal to have the enterprise fettered by the rigidity of state management and control and the officialism which it necessarily brought with it. He objected to taking grants-in-aid otherwise than for services rendered; but how was the money required to be raised? It seemed to him that the money ought to come under proper safeguards which did not involve constant interference or irritating supervision from the National Insurance Fund, which had enormously increased the work of the hospitals.

The opinion that the voluntary hospitals were going to be supplanted by rate-aided institutions was expressed by Mr. E. E. Mativier, chairman of the North Middlesex Hospital, Edmonton, who also strongly criticized the attitude of some medical men towards the nursing sisters. He said that the doctors were reasonably well paid, but what had been done for the nurses? The scale of salaries for nurses was a disgrace.

MISCELLANY

RHODE ISLAND STATE BOARD OF HEALTH

Contagious Diseases Reported for Week Ending
June 28, 1924

Diphtheria

Cumberland	1
Newport	4
Providence	5
South Kingstown	1

Scarlet Fever

Cranston	1
Gloucester	1
Providence	9
Scituate	1
Westerly	1

Measles

Central Falls	1
East Greenwich	1
North Kingstown	3

Pneumonia

Providence	2

Chickenpox

Providence	3

Whooping Cough

Providence	4

Septic Throat

Providence	1

German Measles

Little Compton	1

CONNECTICUT WEEKLY MORBIDITY REPORT

Week Ending July 5, 1924

(Including all cases reported before 11 A. M., Monday, July 7, 1924)

Diphtheria

Fairfield County	
Bridgeport	2
Norwalk	3
Stamford (C)	1
Hartford County	
East Hartford	1
Hartford	2
New Britain	2
New Haven County	
Derby	1
Waterbury	4
West Haven	1
New London County	
New London	2
State total	19
Last week	30

The following diphtheria bacilli carriers were reported:

Hartford	3
New Haven	2

Whooping Cough

Fairfield County	
Greenwich	7
Stamford (C)	1
Stamford (T)	3
Westport	3
Middlesex County	
East Hampton	1
New Haven County	
New Haven	5
Waterbury	1
New London County	
Colchester	1
New London	3
State total	25
Last week	18

Scarlet Fever

Fairfield County	
Bridgeport	2
New Canaan	1
Norwalk	1
Redding	1
Stratford	2
Westport	1
Hartford County	
Berlin	1
Bristol	1
Hartford	1
Manchester	1
New Britain	4
Plainville	2
Wethersfield	1
Middlesex County	
Middletown (C)	1
New Haven County	
East Haven	1
New Haven	1
Seymour	1
Waterbury	2
West Haven	1
State total	26
Last week	53

Measles

Fairfield County	
Bridgeport	1
Greenwich	1
Stamford (C)	2
Westport	1
Wilton	1
Hartford County	
East Granby	7
Farmington	11
Hartford	14
West Hartford	6
Litchfield County	
North Canaan	2
Salisbury	6
Middlesex County	
Middletown (C)	12
Middletown (T)	7
New Haven County	
Madison	1
Milford	7
New Haven	10
Seymour	1
West Haven	7
New London County	
Groton (B)	2
New London	2
Norwich (C)	1
State total	102
Last week	132

Typhoid Fever

Fairfield County	
Greenwich	1
State total	1
Last week	6

Smallpox

Windham County	
Brooklyn	5
Danielson	6
Killingly	4
State total	15
Last week	0

Other Communicable Diseases

Cerebrospinal men.	2
Chickenpox	28
Encephalitis epid.	1
German measles	4
Influenza	2

Malaria	4	Tuberculosis (pul.)	25
Mumps	90	" (other forms)	1
Pneumonia (lobar)	11	Gonorrhoea	9
Trachoma	1	Syphilis	32

MORE SMALLPOX IN DANIELSON AND BROOKLYN

During the past week five more smallpox cases have been discovered in Brooklyn, and ten more in Killingly and Danielson—making a total of twenty-four cases so far in the present outbreak. Five of these new cases were in new families, and the balance were secondary cases in families where smallpox already existed.

DISEASES REPORTED TO THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

WEEK ENDING JULY 7, 1924

Disease	*No. of Cases*	*Disease*	*No. of Cases*
Chickenpox	87	Scarlet fever	102
Diphtheria	109	Septic sore throat	4
Dog-bite	8	Syphilis	48
Dysentery	1	Tetanus	1
Epidemic cerebrospinal meningitis	2	Suppurative conjunctivitis	19
German measles	22	Trichinosis	1
Gonorrhea	60	Tuberculosis, pulmonary	100
Influenza	2	Tuberculosis, other forms	9
Malaria	1	Typhoid fever	9
Measles	311	Whooping cough	73
Mumps	78		
Ophthalmia	9		
Pneumonia, lobar	44		

INTRAVENOUS IODINE

The Therapeutic Gazette, June 15, 1924, summarizes a report by Jeudwine, in the *Indian Medical Gazette* for December, 1923, on the therapeutic valve of intravenous iodine in inflammatory conditions. Jeudwine has given nearly 1,000 injections with the production of only two series thromboses, due, he believes, to using too small veins. He is in the habit of injecting 1 or 2 c.c. of the tincture of iodine, diluted up to 10 c.c. with sterile water. No discomfort occurs except pain at the time of the injection, running up the arm to the clavicle, and leaving when the injection is stopped. He considers it advisable to insert the needle in the vein before syringe is applied to; it is also necessary to dilute the iodine in the syringe.

The favorable effect produced on such inflammatory types as chronic ulcer, incipient tuberculosis of the lung, tubercle of the lung, chronic bronchitis and corneal ulcer he believes due to the rapid hyperleucocytosis following the injection.

REGISTERED NURSES AND TRAINED ATTENDANTS

A RECENT Health Bulletin contained a story of a woman who was sent out by a Nurses' Registry as a registered nurse to care for illness in a private family. Investigation of her training, following a complaint by the Health Officer, brought to light the fact that the woman was not a registered nurse—in fact, so far below standard is the hospital in which she received her training that it could not register in its own state where nursing standards are lower than they are in Connecticut.

The family employing this nurse were deceived.

Everybody should understand that being listed with a Nurses' Registry is quite different from being a registered nurse. With very few exceptions Nurses' Registries are operated as commercial enterprises and being listed with them does not mean that a nurse has passed the examination for registration by the State Board or has been accepted through reciprocity because of registration in another state. A registry is usually simply an "employment bureau."

It has been suggested that supervision of Nurses' Registries might remedy the situation. There appears to be, however, a more fundamental aspect of the problem than that which can be reached by supervision or registration. The standards that have been laboriously developed for the training of nurses call for high natural qualifications and a sound technical education. For the care of acute and serious illness, for public health nursing and for training school executives, such qualifications and training are essential. The idea is growing, however, that the care of mild and chronic illness and convalescence may be safely intrusted to persons with a different type of capacity and a much briefer period of training who, because of less investment in training, can afford to work for more moderate fees. It is apparent that the development of a less thoroughly trained group of nurses would provide nursing service where such service is not now obtainable and would thus be a matter of public convenience.

So keenly has the need for such service been felt that the states of California, Maryland, Michigan, Missouri and New York have already taken definite steps through legislation to provide for such a subsidiary group of nurses while retaining the high standards of training for the regular trained nurse. Selecting a name for members of this group is rather difficult. Such titles as "attendant"—"nursing aid"—and "nursing attendant" have been suggested for differentiating them from the fully trained nurses.

When persons with two grades of training work in the same field the public is entitled to know the training and qualifiations of the persons employed. Thus it would be a matter of simple justice to have both grades of nurses licensed by the state, and so listed with registries that the prospective employer could readily ascertain from a published list or from the registry the training and qualifications of the nurse or attendant to be employed.—*Connecticut State Department of Health.*

DETROIT'S EXPERIENCE WITH SMALLPOX

"During the week ending June 7, 118 cases of smallpox were reported, with 15 deaths.

There are many cases among the pre-school children and among elderly people who have either never been vaccinated or were vaccinated many years ago.

A large part of the activity of the Health Department is devoted to the search for and vaccination of contacts and the quarantine of cases. A large squad of physicians and nurses is working forenoons and a large part of the afternoon, and another squad of physicians and inspectors are employed at night establishing quarantines and listing contacts.

Persons who have a good scar but have not been vaccinated during the past five years are urged to be vaccinated at once. Of course, those who have never been vaccinated and little children should be vaccinated as soon as possible. Smallpox is now invading the better residential districts."—*Detroit Weekly Health Bulletin*, May 17, 1924.

A STUDY IN HOMICIDE

In the analysis of the type of man who commits murder, Dr. A. Warren Stearns discovered the following facts:

Of 100 murderers studied in Charlestown State Prison,
- 15 were mentally diseased
- 41 were born in Italy
- 1 only was born in Massachusetts with both parents born in the same state
- 20 could neither read nor write
- 97 were manual laborers

All of the men studied could be grouped under one or more of the following headings: Those lacking mental discipline for controlling their feelings; victims of alcohol; and those afflicted with mental disease or defect. Only 15 of the 100 fell into this last group. These included 5 feeble-minded, 2 abnormal personalities, 2 chronic alcoholics, and 6 insane. "Murder is not generally a manifestation of mental pathology," says Dr. Stearns, "but rather of low cultural level." Twenty of the hundred had never been to school a day and were illiterate, and 97 had never been capable of other than manual labor.

Racial influences are strongly revealed in this survey, forty-one of the hundred coming from Mediterranean countries alone, chiefly Italy. Of the entire group of one hundred, there was only one native-born Massachusetts man with both parents born in this state.

"One deduction from this study is that we must regulate carefully the admission of the foreign-born. We must apply what we call Americanization to those who are permitted to enter. They must be taught to adopt American standards and should not be allowed to come in so fast that we will continue to have in many of our cities foreign settlements so thoroughly alien as to militate against the inculcation of our own ideals and standards."—*Monthly Bulletin Mass. Soc. for Mental Hygiene, June*, 1924.

AMERICAN INSTITUTE TO HOLD BIG EXPOSITION OF INVENTIONS

Manufacturers in every American industry will be interested in the Exposition of Inventions to be held December 8th to 13th inclusive, 1924, in the famous Engineering Societies Building, New York City. The American Institute of the City of New York is handling this display through its Inventors' Section, with behind it an experience of ninety-six years in fostering and portraying American industrial life.

A feature of the Exposition will be exhibits from the leading American industries showing developments of various machines, utilities and processing methods. In all fields the ingenuity of the inventor and the part he has played in the progress of America will be emphasized.

In this display of American inventions the American Institute will be continuing with a new emphasis almost a century's encouragement of inventors and introduction of their works to the public.

The American Institute also established the first permanent exhibit—an idea later adopted in various industries—where "machines, models, specimens and drawings" were displayed to the public. Great annual fairs of the Institute, begun in 1828 and held at such widely known places in their times as Niblo's Garden, Castle Garden, Crystal Palace, Palace Garden, the Academy of Music and Madison Square Garden, in New York City, portrayed year after year the advancements in agriculture, commerce, manufactures, science and the arts until, with the expansion of the country's business in the last quarter century, the idea developed into the more famous world fairs and national and international industrial expositions under various auspices and managements.

SMALLPOX IN CINCINNATI

Here is the story of smallpox in Cincinnati: One hundred and sixty-two people in Cincinnati have had smallpox since the first of January and of this number, 110 were negroes. In other words, the negroes, who constitute nine per cent of the population, contributed seventy per cent of the smallpox. At the present time we have 48 active cases at the hospital. Of the 162 who have had smallpox, 144 had never been vaccinated. The balance were vaccinated many years ago.

The outstanding feature of the smallpox situation in Cincinnati is that there have been no cases among children attending school.

Downtown in the 15th, 16th, 17th, and 18th wards, better known as the West End, we have had 102 cases. In the Harriet Beecher Stowe School for colored children—which is in the center of the congested district—there has been no smallpox because vaccination is a requirement for attendance.—*The Cincinnati Journal of Medicine.*

NARCOTICS SHOW DECREASED IMPORTATION

The importation, sale, and use of narcotic drugs are reported to be on the decrease. Opium importation has shown a decrease from 471,000 pounds annually to 136,000 pounds annually for a ten year period, which represents a decreased per capita consumption from 36 grains annually to approximately 7 grains, or in morphine the equivalent of seven-eighths of one grain. For the six months ending December 31, 1923, the importation of opium particularly showed a decrease while the sales of the various alkaloid derivatives of opium fell off 50 per cent over the previous six months.

The importation of coca leaves decreased from 626,341 pounds in 1920 to 342,260 pounds in 1923, a drop of approximately 50 per cent in three years.—*The Nation's Health.*

ACKNOWLEDGMENT OF BOOKS FOR REVIEW

The Journal acknowledges the receipt of the following books for review:

Gynecology and Pelvic Surgery. By Skeel. Philadelphia: P. Blakiston's Son & Co. 674 pages.

Maternity Nursing in a Nutshell. By E. H. Wickham. Philadelphia: F. A. Davis Co., Philadelphia. 167 pages. Price $1.50.

Differential Diagnosis, Vol. 2. By Richard C. Cabot. Philadelphia: W. B. Saunders Co. 709 pages. Price $9.

A Study of Masturbation and Its Reputed Sequela. By John F. W. Meagher. New York: Wm. Wood & Co. 69 pages. Price $1.50.

The Relative Position of the Eyes and the Prolonged Occlusion Test. By F. W. Marlow. Philadelphia: F. A. Davis Co. 96 pages. Price $2.50.

Cosmetic Surgery. By Chas. Conrad Miller. Philadelphia: F. A. Davis Co. 263 pages. Price $4.

Diseases of Middle Life. Vols I and II. By Frank A. Craig. Philadelphia: F. A. Davis Co. 951 pages and 920 pages. Price $15.

The Management of Diabetes. George A. Harrop, Jr., New York: Paul B. Hoeber, Inc. 176 pages. Price $2.

The Operating Room. By the Staff of St. Mary's Hospital, Rochester, Minn. Philadelphia & London: W. B. Saunders Co. 165 pages. Price $1.75.

Pharmacology & Therapeutics or The Action of Drugs. By Arthur R. Cushny. Philadelphia and New York: Lea & Febiger. 707 pages. Price $6.

The Science and Art of Anesthesia. By William Webster. St. Louis: C. V. Mosby Co. 214 pages. Price $4.75.

Treatment of the Common Disorders of Digestion. By John L. Kantor. St. Louis: C. V. Mosby Co. 245 pages. Price $4.75.

Selections from the Works of Ambroise Pare. By Dorothea Waley Singer. New York: Wm. Wood & Co. 246 pages. Price $4.

Transactions of the 29th Annual Meeting of the American Laryngological, Rhinological and Otological Society, Inc. Published by the Society. 642 pages.

First Steps in Organizing a Hospital. By Joseph J. Weber. New York: Macmillan Co. 205 pages.

Hospital Organization and Operation. By Frank E. Chapman. New York: Macmillan Co. 270 pages.

International Medical Annual. Various authors. New York: Wm. Wood & Co. 556 pages. Price $5.

Diabetes. By Philip Horowitz. New York: Paul B. Hoeber. 219 pages. Price $2.

Bulletin No. X of the International Association of Medical Museums and Journal of Technical Methods. New York: Paul E. Hoeber, Inc. 165 pages. Price $3.

Insulin in General Practice. A. Clarke Begg. London: William Heinemann, Ltd. 130 pages. Price 5/ net.

Psycho-Analysts Analysed. By P. McBride. London: Wm. Heinemann, Ltd. 142 pages. Price 3/6 net.

Aids to Medical Diagnosis. By Arthur Whiting. New York: William Wood & Co. 177 pages. Price $1.50.

The Human Testis. By Max Thorek. Philadelphia & London: J. B. Lippincott Co. 548 pages. Price $8.

Studies from the Rockefeller Institute for Medical Researche. Volume XLVIII. Privately published. 597 pages. Price $2.

Transactions of the American Proctologic Society. Twenty-fourth Annual Session. New York: Paul B. Hoeber, Inc. 89 pages.

Pathological Technique. By Frank Burr Mallory and James H. Wright. Philadelphia and London: W. B. Saunders Co. 666 pages. Price $6.

Dislocations and Joint-Fractures. By Frederic J. Cotton. Philadelphia and London: W. B. Saunders Co. 745 pages. Price $10.

The Anatomy of the Nervous System. By Stephen W. Ranson. Philadelphia and London: W. B. Saunders Co. 421 pages. Price $6.50.

Hygiene and Public Health. By George M. Price. Philadelphia and New York: Lea & Febiger. 306 pages. Price $2.25.

The Culture of the Abdomen.—The Cure of Obesity and Constipation. By F. A. Hornibrook. New York: William Wood & Co. 67 pages. Price $2.25.

Common Symptoms of an Unsound Mind. By Rutherford Jeffrey. New York: Paul B. Hoeber, Inc. 268 pages. Price $2.50.

Two Lectures on Gastric and Duodenal Ulcer. Sir Berkeley Moynihan. Bristol: John Wright & Sons, Ltd. 48 pages. Price 2/9 post free.

The Child: His Nature and His Needs. A contribution of the Children's Foundation. Privately published. Valparaiso, Ind. 516 pages. Sent on payment of $1 to the publication fund of the Institution.

Operative Surgery. Volume IV. By Warren Stone Bickham. Philadelphia and London: W. B. Saunders Co. 842 pages. Price $10.

National Health Series—The Expectant Mother. R. L. DeNormandie. Venereal Diseases. William F. Snow. Tuberculosis. Linsly R. Williams. Love and Marriage. T. W. Galloway. New York: Funk and Wagnalls.

Diabetic Manual. Elliott P. Joslin. Lea and Febiger: Philadelphia and New York. 211 pages. Price $2.

Diseases of the Chest and the Principles of Physical Diagnosis. Third Edition. By George William Norris and Henry R. M. Landis. Philadelphia and London: W. B. Saunders Co. 907 pages. Price $9.50.

Diseases of the Eye. 10th Edition. By George E. de Schweinitz. Philadelphia and London: W. B. Saunders Co. 865 pages. Price $10.

Collected papers from the Mayo Clinic and the Mayo Foundation. XV. 1923. Philadelphia and London: W. B. Saunders Co. 1377 pages. Price $13.

Domiciliary Treatment of Pulmonary Tuberculosis. By R. Rufenact Walters. New York: William Wood & Co. 288 pages. Price $4.

The Romance of a Living Temple. A Study of the Human Body. By Frederick M. Rossiter. New York: George Sully & Co. 254 pages. Price $2.

Peculiarities of Behavior. By Wilhelm Stekel. Volumes I and II. New York: Boni and Liveright. 328 pages. $8.50 per set.

Clinical Aspects of the Electrocardiogram. By Harold E. B. Pardee. New York: Paul B. Hoeber, Inc. 222 pages. Price $4.

The Cure of Pulmonary Tuberculosis—by Rest and Exercise. By Hugh M. Kinghorn. Boston: Richard G. Badger. 169 pages.

International Clinics. Volume II, Thirty-Fourth Series, 1924. Philadelphia and London: J. B. Lippincott Co. 306 pages.

Diseases of the Nose, Throat and Ear. Various authors. New York: William Wood & Co. 413 pages. Price $5.50.

A Descriptive Atlas of Radiographs of the Bones and Joints. By A. P. Bertwistle. New York: William Wood & Co. 198 pages. Price $5.

ANNUAL MEETING—CONNECTICUT PUBLIC HEALTH ASSOCIATION

The Connecticut Public Health Association held its annual meeting at Memorial Hospital, South Manchester, on July 2nd at 10 A. M., standard time. The program was opened by Mr. R. V. Treat, First Selectman of Manchester, and Dr. William H. Coon, President of the Association. An address on "Public Health Practice in the small cities and towns of Connecticut" was given by Professor I. V. Hiscock of Yale School of Public Health and was followed by a discussion of the "Proposed Legislation of Meat Inspection."

"The Function and Opportunities of the Community Hospital" claimed attention at the afternoon session and the rest of the day was devoted to inspection of the Public Health Activities of Manchester.

SUMMER HEALTH CAMP AT PRENDERGAST PREVENTORIUM

The Boston Tuberculosis Association has opened a summer health camp on the grounds of the Prendergast Preventorium. This is to care for eighty children, boys and girls, for the two summer months, and will not interfere with the regular functioning of the Preventorium with its twenty little girls.

Registrations for the summer camp began Monday, June 30, and during the week the quota was filled. The children sleep in tents, with a large mess tent for meals. The equipment has been increased by the introduction of city water for bathing and domestic uses and for fire protection, while city gas has been carried in for the cookstoves.

The camp personnel includes Dr. George W. Hill, chairman of the Prendergast Committee of the Association, with the president, Dr. John B. Hawes, 2d, and the executive secretary, Miss Bernice W. Billings, in advisory capacity. Dr. Eli Friedman is camp physician. The resident staff includes Louise H. Best, R. N., a graduate of the Newton Hospital Training School with special courses at Simmons, for camp matron, and Miss Ruth Alger, graduate of Northfield Seminary with special work at Simmons, for dietitian. The Park Department of Boston furnished a playground teacher, Miss Grace Marie Mitchell. For the boys the camp manager is J. F. Reardon assisted by Stanley Kingston of Winchester.

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REMOVALS

Dr. Winifred M. Grant of Worcester has moved her office to 44 Pearl St..

Dr. Rufus W. Sprague has moved from Charlestown (Middlesex South) to 448 Beacon St., Boston (Suffolk).

Dr. Morgan P. Hanlon of Cambridge has moved to 115 Huron Avenue.

Dr. Sidney Cushing Wiggin announces the removal of his home office from 1990 Columbus Avenue to 12 Seaver St., Roxbury, June 30, 1924. He is retaining his office at 270 Commonwealth Ave., Boston.

Dr. Francis Hamilton MacCarthy has moved from 1109 Boylston St., Boston, to 335 Huntington Ave., Boston.

Dr. Algernon Coolidge has moved from 613 to 198 Beacon St., Booton.

Dr. Frederick Bryant wishes to announce the removal of his office to 10 Hammond St., Worcester, Massachusetts.

Dr. Donald S. King has been transferred from the Norfolk to the Suffolk District. His office is now at 205 Beacon St., Boston, having moved recently from No. 311, on that street.

Dr. Basil E. Barton has moved from Worcester (Worcester) to Ludboro (Hampden) where he has opened an office at 12 North street.

Dr. James H. Townsend has moved from New Haven, Conn., to Brooklyn, N. Y., where his address is c/o J. L. King, 15 Clark St.

Dr. Somers Fraser has moved his office from 514 to 395 Commonwealth Ave., Boston.

Dr. E. V. Hardwick has moved from Dedham to 1522 Commonwealth Ave., Allston.

Dr. Samuel A. Merlin has moved from Springfield to 43 Compton St., Boston.

Dr. Newell W. Giles has left Palmer and is now at the New York Ophthalmic Hospital at 201 East 23d St., New York City.

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OBITUARY

DR. BEVERLEY ROBINSON OF NEW YORK

Full of years and honors a good man has passed on to greater reward.

Dr. Beverley Robinson passed away on the 21st of June. He was born in Philadelphia, March 22, 1844, of distinguished Virginia ancestry. Son of the late Moncure Robinson of Richmond and Philadelphia, the engineer who built the Philadelphia & Reading R. R., and the Richmond, Fredericksburg & Potomac R. R. His mother was a granddaughter of Edmund Randolph, 1st Attorney General of United States. He graduated from the University of Pennsylvania in class of 1862. Among his classmates and intimate friends were John Cadwalader and the late Dr. Wm. Pepper, Provost of the University.

He joined the Pennsylvania Militia and took part in the Gettysburg campaign. Studied medicine in Paris and graduated with honors, the first American to graduate at the University of Paris. His friends there became the recognized leaders of French medicine. He then studied diseases of the nose and throat under Sir Morrell Mackenzie in London and returned to this country and started practice in New York. He married Anna E. Foster, of an old Dutch and Knickerbocker family.

Dr. Robinson has been connected with many most important New York Hospitals—attending and then consulting physician at St. Luke's Hospital for over 40 years. At his death he was the senior consultant. Also he had been attending and consulting physician at Charity Hospital(Blackwell's Island) and in early days used to cross the river on ice in a small boat. He was also attending physician at New York Hospital, Professor of Clinical Medicine at Bellevue, and one of the founders of the Association of American Physicians, former President of the American Climatological Association and a member of many other societies.

During the World War he was one of six American physicians to receive an honorary medal from the Faculty of Medicine of Paris.

He was a member of the Century and University Clubs and the George Washington Post, G. A. R.

Dr. Robinson was a brother of the late John M. Robinson, President of Old Dominion S. S. Line, Seaboard Air Line, and other southern railroads. He was also a brother of the late Edmund Randolph Robinson, lawyer, of New York. His surviving sisters are: Mrs. Charles Chauncey, Mrs. A. Sydney Riddle and Mrs. Henry C. Boyer, all of Philadelphia. Surviving children: Miss Pauline Robinson, Mrs. Arthur W. Butler, Beverley B. Robinson.

The cause of death: Sclerosis of the arteries and chronic heart trouble. He had been ill for only a few weeks but was not considered to be in a serious condition until within a few days of his death. Mrs. Robinson died three years ago.

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SPITTING AND SMOKING IN THE SUBWAYS OF NEW YORK

From January 1 to May 21, 1923, the police squad of the New York City Health Department arrested 2045 persons found to be spitting in the subways. 1784 were convicted and fines imposed amounting to $3670.

During the same period 4743 smokers were arrested and 4311 were fined $9311.